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TELEPHONE and Management ENGINEER

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1955

THE NATIONAL TELEPHONE MAGAZINE

Featuring in This Issue—

★ JOB ENTHUSIASM MEANS MORE WORK, *by Ernest W. Fair*
★ MANHOLE GAS DETECTION METHODS, *by J. G. Dalton*
★ CONSTRUCTION OF LINE PLANT, *by R. G. Tungate*
★ DESIGNING MODERN COMMUNICATION LINES, *by J. N. Petrie*
★ TELEPHONE INDUSTRY NEWS, *Page 18*

TELEPHONE DIRECTORY ADVERTISING EXCLUSIVELY

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SERVICE, EXPERIENCE, KNOWLEDGE—

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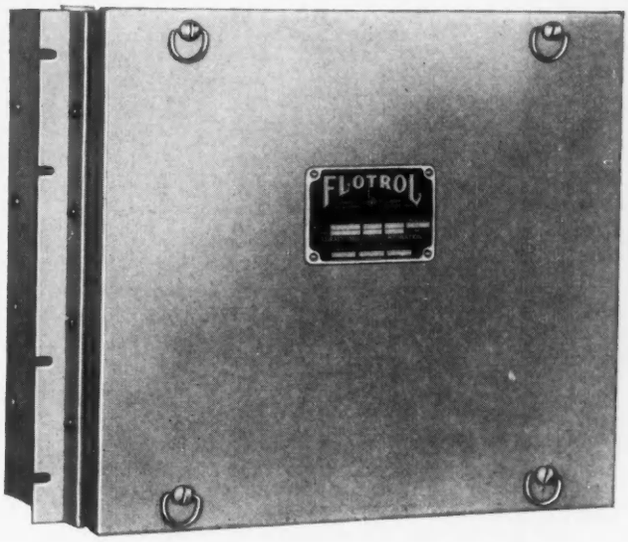
FLOTROL

REGULATED VOLTAGE

Carrier Supply Units

-WITH BUILT-IN STANDBY FOR DC OPERATION!



THE CS-1 AND CS-2 CARRIER SUPPLY UNITS are designed to supply 130 volt 0.5 ampere plate current for carrier or repeater operation. The units operate from 115 volt 60 cycle single phase power supply normally, and are arranged so that during periods of power interruption they automatically transfer to a built-in vibrator which operates from the exchange battery. The output voltage is regulated within ± 3%, with the unit compensating for variations in load and input voltage.

The same regulation is provided when operating from the battery even though the battery voltage may vary from 45 to 52 volts on the Model CS-1 or 22-25 volts on the Model CS-2.

The carrier supply units are housed in attractive steel cabinets finished light gray and can be mounted on the wall or in a 19 inch relay rack. Either model provides uninterrupted plate current during power failures.

Write for Bulletin 170

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TELEPHONE and Management ENGINEER

A Telephone Engineer Publication

FEBRUARY 1955
Vol. 59 No. 2

The National Telephone Magazine

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ARTICLES

Editorial — "Management Works To Improve Management"		43
Meet The Honorable Matt L. McWhorter		34
Job Enthusiasm Means More Work	Ernest W. Fair	52
Gas Detection Methods	J. G. Dalton	54
Construction of Local Line Plant In England	R. G. Tungate	58
Designing Modern Communication Lines	J. N. Petrie	60
Modern Cable Construction (Section IV-C)	John S. Reed	68
New Equipment & New Methods	John G. Reynolds	77

FEATURES

Coming Conventions		49
Across The Editor's Desk		8
Telephone Engineer Newsletter		11
Industry News Briefs		18
Washington Bureau Reports		48
Automatic Education With Poster Slides		86
The Back of The Book	John G. Reynolds	120

DEPARTMENTS

Professional Advertising	102
New Products' Showcase & Buyers' Guide	105
Classified Advertising	108
Advertisers' Index	119

FRONT COVER

NEW BREMEN, OHIO, CUTOVER: — Prior to recent cutover to dial operation these Ohio Consolidated Tel. Co. operators served New Bremen subscribers. Left to Right: — ALMA J. HEIL, ANNA KUEST, LORRAINE BLANKE, NORMA HIRSCHFELD, HILDA BROERMAN (rear), BERNADETTA HEIL (front seated), HELEN SCHROER (rear), GECIENA HALSEMA (front seated), IRENE BAY and ELIZABETH HALSEMA. Four veteran employes of this group, HILDA BROERMAN, GECIENA HALSEMA, ELIZABETH HALSEMA and ANNA KUEST, retired under the company's pension plan. MISS BERNADETTA HEIL transferred to the company's St. Mary's toll center office and the remainder of the operators were terminated in accordance with the provisions of the union agreement.

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LOWER INSTALLATION COSTS

LESS MAINTENANCE

with this *NEW, BETTER* exchange cable!

SUPERIOR *Telephone* CABLE

Better Physically, Chemically, Electrically

Superior Telephone Cable is completely insulated and sheathed in modern plastics . . . your assurance of less maintenance and a great reduction in the number of outages due to lightning.

Factory-tested Superior Cable is fully guaranteed to be completely satisfactory in design, materials and workmanship.

The application of the most advanced engineering techniques to the most modern manufacturing methods has resulted in the production of a truly superior cable.

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NO PAPER TO GET WET

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SUPERIOR CABLE

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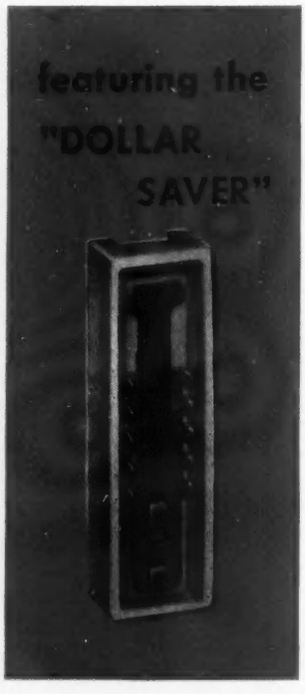

Day by Day, economy-minded telephone men pass the word to their friends: "Automatic's Type 19A Crossarm Arrester *saves you money!*" The reason: Lower — *much lower* — maintenance. There's no frequent, costly replacement of arrester carbons or blocks. Type 19A uses our famous Type 70 Dollar Saver Discharge Block with an exclusive bimetallic plate which grounds the line upon discharge, then RESETS ITSELF. By so doing, it avoids the fast burning of carbons and sawteeth and shorted gaps which cause maintenance.

Here's another good tip: put Type 19A's between your toll lines and protected cable terminals. 19A will reduce fuse operation from lightning and cut your maintenance still further!

Order Cat. No.	Protects	Gap	Shipping Wt.
SA-91	10 wires	.0055"	5 lbs.

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1033 West Van Buren Street, Chicago 7 U. S. A.

The Editor's Desk

Leon F. Roberts

CONGRATULATIONS to *Leon F. Roberts* on his being selected as U.S.I.T.A. Director of Information. He is already on the job at his desk in the Washington headquarters of the United States Independent Telephone Association. Leon's experience in newspapers, politics and as an executive in the telephone industry qualifies him uniquely for his new duties as the association needed a man with all of these unusual qualifications.

Those of us who attend many of the yearly telephone association conventions will be seeing Leon more often than we have during the past few years while he was serving in an executive capacity with the Gary group companies. We congratulate the officers and directors of U.S.I.T.A. on their choice.

Executives' Conference

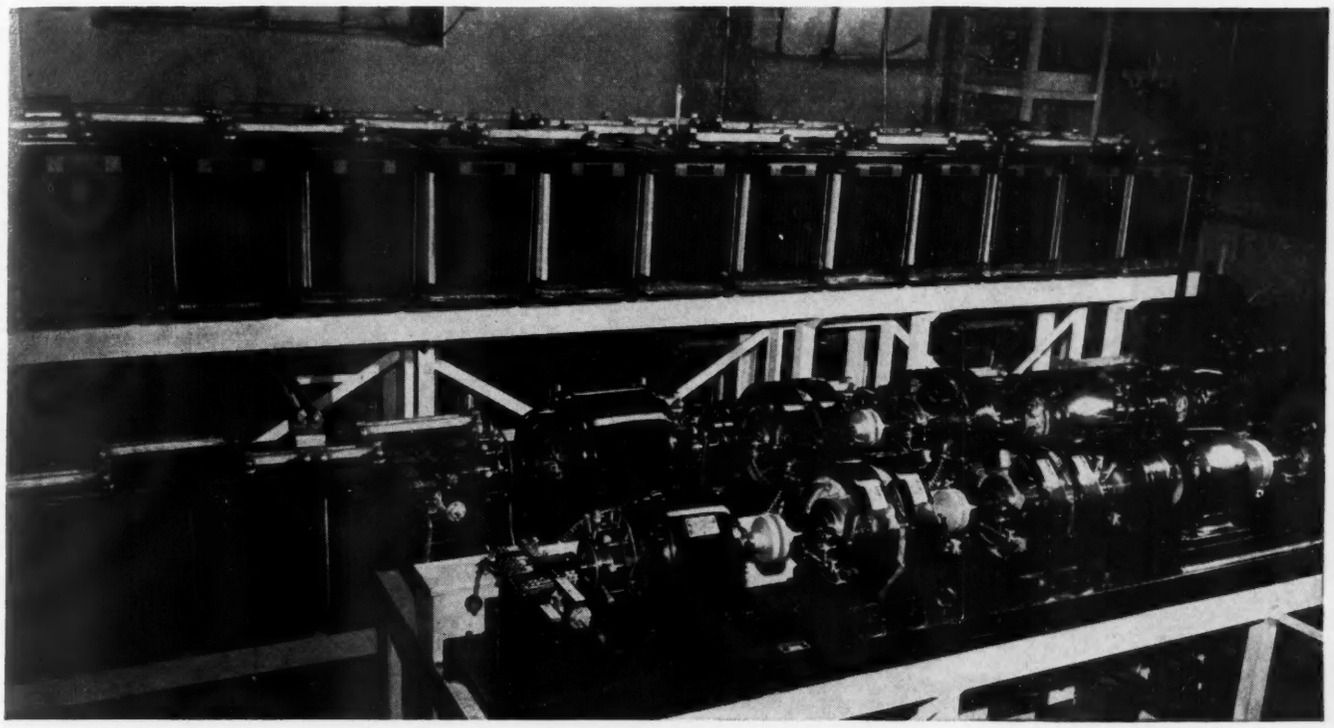
HERE IS MORE information on the social side of the coming Executives' Conference of U.S.I.T.A. scheduled for April 4 and 5 at Belleair, Florida. In our last column we mentioned that *Carl Brorein* and his associates at the *Peninsular Telephone Co., Tampa,* had had inquiries from telephone folks that are planning a trip to Havana just before or after this meeting. If you are interested in flying to Havana in 1 hour and 35 minutes from Tampa or in a boat trip of slightly over one day write *Paula Steward Travel Service, Suite* 131 *Mezzanine floor, Hillsboro Hotel, Tampa,* as Carl has arranged for this service to plan your trip.

F. C. Marvin

OUR FRIEND OF many years in Zumbrota, Minnesota, *F. C. Marvin* was very thoughtful when he mailed this writer a copy of the Golden Anniversary booklet issued last month. It was prepared by C. F. Marvin and is beautifully bound in a gold cover. The booklet has 24-pages of facts and historic information about the company which started so unauspiciously in 1905. We join the industry in congratulating the Marvins on this their 50th Anniversary.

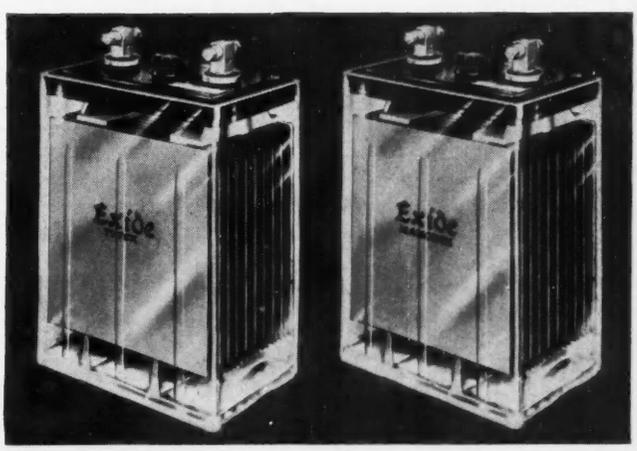
"GOOD SERVICE STARTS WITH DEPENDABLE, ADEQUATE POWER"

says Peoples Telephone Corp., users of Exide batteries for continuous float operation



THIS POWER ROOM incorporates the latest developments to insure continuity of service—under present load conditions and for future growth. Power is assured by the 46 cell Type FOE-29 Exide-Tytex battery rated at 1120 ampere hours. Charging and loading equipment consists of three diverter pole generators automatically cut in or out to meet load requirements. Exide C.E.M.F. cells allow for proper charging of the battery.

THE PEOPLES TELEPHONE CORPORATION, of Butler, Pa., serves over 24,500 dial automatic stations from twenty exchanges. This main central office serves over 15,000.



EXIDE-TYTEX and **EXIDE-MANCHEX** batteries, in sealed glass or plastic containers, are made for every type of telephone service . . . for central office and private branch exchange equipment, for a standby source of power to insure service continuity. Call your Exide sales engineer, write for details.

Your best battery buys . . . FOR ALL TELEPHONE SERVICES

Exide®
TYTEX® and MANCHEX® BATTERIES

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

ACME VISIBLE **FLEXO LINE**

P.B.X. KEYSHELF DIRECTORY UNITS

Hardt Richard W LI 4-0002
Harris Maurice R TA 4-4341
Harris William T BA 4-2241
Helms A Franklin MO 5-7910
Henderson Matthew JA 5-5353
Hill Denny M Rev KR 7-7158
Hodgman Stewart LI 7-0618
Hollowell W T O&E Engrg 1763
Holman Howard H MA 7-3692
Hough W G ME 4-2650
Hull James L GR 3-1130
Illad Louis S EX 4-9006
Imel George M Admin 5460
Ingalls Bernard RO 9-5422
Inson Daniel H EX 2-6221
Inscoe W Edward UN 4-1693
Irvin J W TU 6-2351
Ives Thomas K EM 9-2192
Jackson Albert H AD 4-9113
Jackson Paul G WA 3-5056
Jacobs Wiley W LA 2-9809
Jaffe Louis I AM 5-5943
James Ernest L PE 3-6795
James Leroy JE 3-1603
Jenkins Wright Wm CA 6-8150
Jergens Jack R LE 3-0542
Johns Nicholas DI 4-1158
Johnson C Lloyd O&E Plt 8430
Johnson Ralph W EX 7-9973
Johnson Wilson AD 2-5341
Jones Melvin CO 4-8275
Jones Reginald MA 3-3147
Justis Marshall TI 5-1375
Kaplan Milton H EX 5-1726
Kennon B F Pers Pet 3759
King Robert T HO 3-4340
Kissell Vernon C HU 4-1342
Knight L Stanley RA 7-5650
Kyle John H MA 4-5906
Lamb Donald K UN 3-7086
Lansdale Howard HO 2-9152
LaRue Ralph S TU 8-3254
Lawrence R Wesley EX 4-5491
Lester Robert B O&E Traf 7054
Little Clyde M UN 4-1154
Lowe Linwood L JE 5-6178
Luck Paul RA 5-7231
Lyon Franklin M LE 3-2693
Pollard Herman NA 8-4366
Richman Paul UN 8-0840
Usher Joseph A AD 7-3800

With the advent of inter-toll dialing, it is essential for users of P.B.X. Boards to have a visible record of all frequently called numbers. Flexoline Keyshelf Directory units are specifically engineered and designed for use on P.B.X. switchboards and furnish the long-wished-for flexibility of individual Flexoline listings on the keyshelf.

A unique and time-saving feature has been developed and incorporated into the units—the frames are self-indexing. The last Flexoline strip on the front of each frame is *visible.* Thus listings may be added or otherwise changed without concern for label changing or other indexing detail. The expansion factor within each side of each frame is filled with blank Flexoline strips until each space (easily adjustable to any location) is wanted for an actual listing.

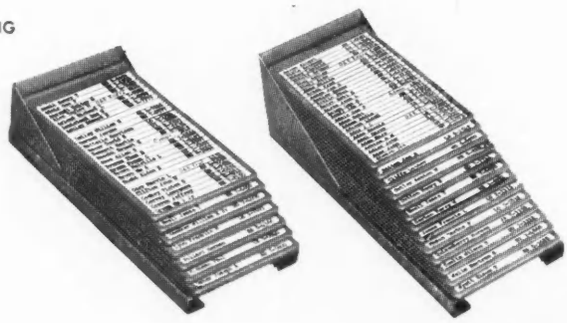
TWO SIZES

7 frame unit with 390 listings capacity
13 frame unit with 700 listings capacity

Attractively finished in Greytan—frames are aluminum and are removable. Non-skid corrugated rubber strips are mounted on the underside of the base, which is of "bridge" construction for straddling divider strips on switchboards. (When specified, flat base units will be supplied, with overall corrugated rubber attached to bottom.)

The Flexoline strips are furnished in sheets of 42 strips per sheet, pre-scored horizontally to the 1/6" standard typewriter spacing. With each unit, a supply of Flexoline is included which is sufficient to completely establish the reference listings and to accommodate several hundred listing changes.

PAT. PENDING



Here are two informative booklets illustrating and describing various units which have been designed for, and use-tested by, telephone companies throughout the country.
Send for your copies today!

Acme representatives will gladly cooperate with you in promoting "Make Long Distance Calls by Number"

ACME VISIBLE RECORDS, INC. CROZET, VIRGINIA

District Offices and Representatives in Principal Cities

The Silver Anniversary Terminal

News of the introduction of the Cook XB Cable Terminal twenty-five years ago may have been overshadowed by the vivid descriptions of the world series victory of Connie Mack's Philadelphia Athletics...reports of Herbert Hoover's presidential activities...and headlines telling of the first Paris to New York nonstop flight. But, today this Silver Anniversary Terminal stands out as a truly important improvement in telephone distribution systems. Although some minor improvements have been made since the first models were installed a quarter-century ago, the basic design has never been equalled for excellence of service as attested through universal acceptance by the telephone industry in the United States, and throughout the world.

Available in 0, 11, 10, and 20 pair with or without stub

2700 SOUTHPORT AVENUE CHICAGO 14, ILLINOIS

Tele-Views

BEEMER, NEB.:—Cummings County Independent Telephone Co., Wisner, Neb., recently installed on outside booth at its Beemer, Neb., exchange. Picture shows SENATOR JOHN BEAVER of Beemer placing the first call; MRS. EILEEN CAMMENZIND (left) local manager and H. D. THOMPSON, general manager of the Cummings County Company.

DONALD C. POWER, (left), president of General Telephone Corp. of New York, was a recent visitor in Santa Monica, Calif. and guest of General Telephone Company of Calif. He is shown with EDWIN M. BLAKESLEE, president of the California company, inspecting the new director monitor panel in the Santa Monica central office. During his stay he conferred with General Telephone Co. executives concerning installation of new toll ticketing equipment in two of the firm's exchanges and other problems relating to telephone operations.

BID OPENING:—The above photo was taken at the bid opening for outside plant construction in the first section of the Grand River Mutual Telephone Corp's rebuilding project. Shown in the corporation's office at Princeton, Mo., are (l. to r.): — JOHN RAGLAND of H. N. Roberts & Associates; VERNON FREEMAN, REA field engineer; H. S. HICKS of. H.N. Roberts & Associates; and PHIL HOUCK, company attorney.

NEW PBX AT BLOOMINGTON: — A new, 300-line private automatic branch exchange, with multiple-line, cord-type attendant's cabinet, recently was cut into service by Illinois Telephone Co. at General Electric Co.'s new $11,000,000 plant in Bloomington. Establishment of the new Bloomington plant is a typical demonstration of the decentralization of large industry by removals from metropolitan cities to less-crowded areas which frequently are served by the Independent telephone industry. Shown in above photo are (l. to r.): — J. F. VAN DE VUSSE, president, and J. B. CHERRY, district manager, of Illinois Telephone Co.; NYLE REDDING, plant facilities manager of General Electric; JESSE YARGER, telephone company's plant supervisor, and RICHARD C. EHRMAN, General Electric's community relations director, looking on as JANE BARKOVIAK, operator, and MISS EDNA GOODWIN, PBX supervisor, place the new communication systems in operation.

1600TH TELEPHONE:—Cummings County Independent Tel. Co., Wisner, Neb., recently installed its 1600th telephone. The above photo RUDY MAHLKE, owner of Mahlkes 5c to $1.00 store, placing first call; installer GENE HOLLAND (left) and BOB LEARY (center) of Stromberg-Carlson Mfg. Co. watch.

NEWSLETTER

TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

Dear Sir: February 15, 1955

1955 U.S.I.T.A. EXECUTIVE'S CONFERENCE will be held at The Belleview-Biltmore Hotel, Belleair, Fla. on April 4-5 – Monday & Tuesday. Each person planning to attend conference should make his own reservation by writing directly to hotel indicating accommodation desired & stating that he will be in attendance at U.S.I.T.A. Executives' Conference. U.S.I.T.A. officers are developing program that will be of interest and value to management heads & executives of Independent companies. All speakers will be from the industry.

Unlike annual U.S.I.T.A. Conventions, the Executives' Conference is not an open affair. Attendance is limited to management heads & executives of companies which are U.S.I.T.A. members. In addition to operating companies this includes manufacturers, suppliers, directory publishers, trade magazines, Presidents & Secretaries of State Tel. Associations.

* * *

REA ALLOCATED $347,000 to Thorp (Wisc.) Tel. Co. last month. Borrower, now providing common battery & magneto service to 616 subscribers over 86 miles of line, plans dial conversion program, construction of new central office, rebuilding of 41 miles of line, & 88 miles of new line.

Sand Hills Rural Tel. Co-op., Jefferson, S. C., was granted 2nd loan of $314,000 to help finance construction of dial system to serve 3291 subscribers in 3 South Carolina counties. Co-op plans to acquire from United Tel. Co. of the Carolinas facilities now serving 1087 subscribers over 146 miles of line. Completed system will include 869 miles of line & 7 dial exchanges.

* * *

GENERAL TELEPHONE SYSTEM will have more than one-half billion dollars invested in telephone plant by 2nd quarter of 1955. This was one of highlights brought out by President Donald C. Power during his talk Jan. 27 before 65 women analysts, bond buyers & trust department officials. This meeting "for women only" was held at Lawyers Club in New York City.

During his talk Mr. Power discussed important factors in General Telephone System's rapid development. Pointing out that 1955 expansion will exceed record high expenditures of 1954, Mr. Power went on to state that more than 78% of General's telephones in service will be dial operated by end of 1955. General Telephone System expects to gain about 100,000 more telephones by internal growth during 1955.

* * *

NEW RATES: – New rates approved for Bay Springs (Neb.) Tel. Co. will boost gross revenue $5,694 per year to estimated total of $25,437.74. Net profit before interest and dividends is estimated at $4,318.47, 4.58% return on base of $94,348.15 . . . Rates approved for Paul Bunyan Rural Tel. Co-op, Kelliher, Minn., will boost annual net income from loss of $1,312 to $7,841, & produce 2.06% return on $380,000 rate base.

Co-op has $388,000 REA loan. New rates are effective upon completion of dial conversion . . . West Central Tel. Assoc., Sebeka, Minn., authorized to increase rates after exchanges are converted to dial. New rates will produce net income of $29,778, 5.24% return on $568,000 rate base. Company has $200,000 REA allocation & has applied for additional loan.

* * *

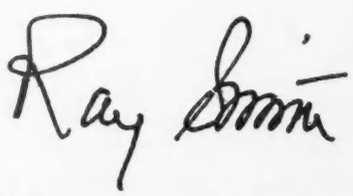
SALES & PURCHASES: – Herman Loge, Frost, Minn. purchased Granada (Minn.) Tel. Co. ... Polar Rural Tel. Mutual Aid Corp., Petersburg, N. D., will purchase Hunter (N. D.) Tel. Co., Flem Tel. Co., Petersburg, N. D., Royal Tel. Co., Inkster, N. D., & Dahlen (N. D.) Tel. Co. . . . Southern Bell Tel. & Tel. Co. purchased Mayport (Fla.) Tel. Co. ...Twin Valley-Ulen Tel. Co. purchased telephone properties of Gary (Minn.) Tel. Co. . . . Indiana Bell Tel. Co. planning acquisition of St. Philips Tel. Co., Evansville, Ind., & New London Co-op Tel. Co., Kokomo, Ind. . . . Southern Bell Tel. & Tel. Co. will acquire 5 of 7 exchanges operated by Bethany-Converse Tel. Co. Exchanges are Greenwood, Keatchie, Longstreet, Naborton & Converse, La. They serve 640 subscribers . . . Chesapeake & Potomatic Tel. Co. of Va. Will purchase Peninsula Tel. Corp's., Toana, Va. The company serves 160 subscribers.

* * *

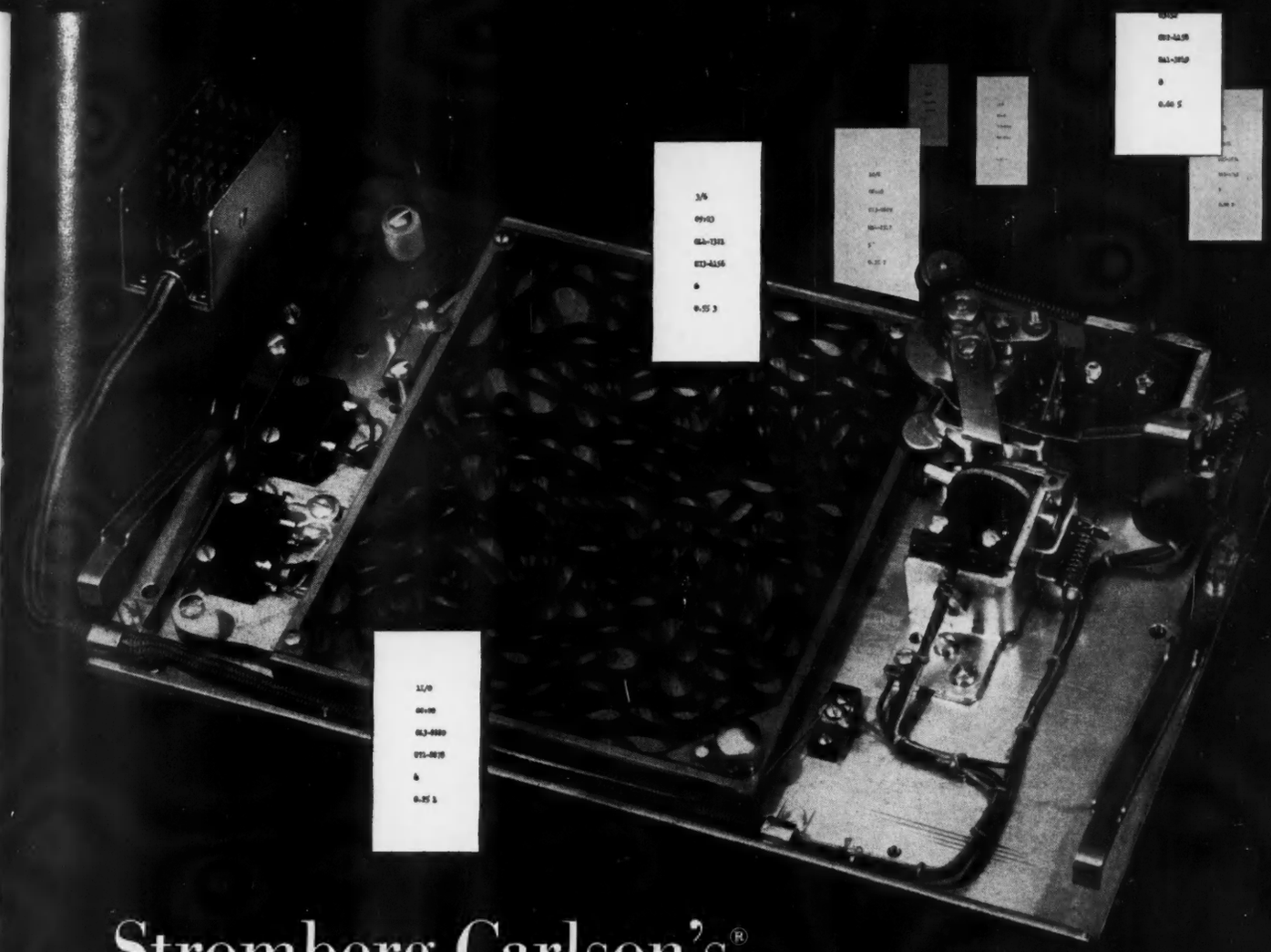
PEOPLE IN THE NEWS: – Ira L. Fullerton, dist. mgr. Texas Tel. Co., Denton, Texas & Frank Kent, plant Supt. Texas Tel. Co., retired Jan. 1. Fullerton has 52 years of service, Kent 50 years . . . C. J. Loehr, sec. of Lone Tree (Ia.) Tel. Co. retired recently. He had served company for 25 years . . . John F. O'Connell named chief engineer General Tel Co. of Illinois . . . Wayne P. Davis elected pres. Seymour (Ia.) Tel. Co. He succeeds H. L. Campbell. Orlanda Milten named mgr. to succeed Charles Shubat . . . Chris Nissen named mgr. Wright & Franklin County Tel. Co., Dows, Ia. He succeeds E. C. Ford . . . Commissioner John C. Hammer elected chairman of Tennessee Railroad & Public Utilities Commission. Mrs .Hautie W. Shute reappointed secretary . . . Edward B. Cole named mgr. Federated Tel. Co-op, Chokio, Minn. New co-op plans service for 24 townships & towns of Chokio, Odessa, Correll, Halloway & Donners, Minn. . . . Orley Tart retired from duties with Alexandria (Minn.) Tel. Co. He had completed 45 years of service.

* * *

RURAL CO-OP ACTIVITIES: – United Tel. Mutual Aid Corp., Langdon, N. D., announced it had raised equity funds required to qualify for REA loan. Wallace A. Osmon named deputy coordinator of the co-op . . . Sisco Electric, Amarillo, Texas, was low bidder on $329,336.63 construction project of Rodeo Telephone Membership Corp., Burwell, Neb. . . . McCook Co-op Tel. Co., Salem, S. D., started construction of 700 miles of rural lines. Co-op has $477,000 REA loan. M. J. Duxbury is board chairman.



Ray W. Smith, Editor



Stromberg-Carlson's® XY® toll ticketing system does all your record-keeping!

Toll calls under the direct control of the calling subscribers are wonderful—provided some*body* or some*thing* records every bit of call data necessary for billing. The Stromberg-Carlson XY Toll Ticketing does exactly that—unerringly and unattended.

The XY Magnetic Trunk Recorder, using a continuous loop of ¼" magnetic tape, "listens in" and records all facts involved. At a predetermined time, when toll traffic is low, the XY Recorder feeds its information into a Playback which, in turn, activates Printing equipment. This equipment produces either printed tickets or punched cards.

Remote operation from unattended offices—instant playback whenever unusual traffic loads bring the recorder tape near to its capacity—complete supervisory functions every hour of day or night—application to Carrier transmission—these and dozens of other features will interest you and prove profitable. Ask your nearest representative for full details and booklet T-124.

Stromberg-Carlson®

ROCHESTER 3, N. Y.

Odds in

NORTH N-541
that modern look . . . designed for efficient, day-in-day-out service. Handpiece is light weight—better balanced.

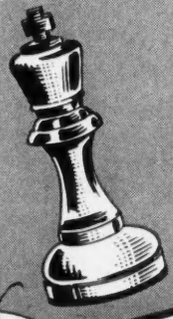
NORTH N-541
base-mounted dial, ringer, condenser, capacitors; easy accessibility.

NORTH N-541
case is completely removable . . . made of high impact plastic . . . stronger, more attractive.

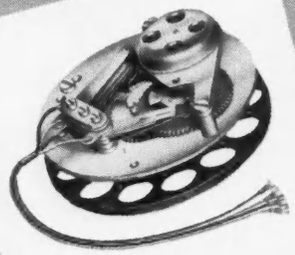
NORTH N-541
new high impedance ringer . . . single coil with laminated core. Better than 100,000 ohms resistance at 1000 cycles. Harmonic, decimonic, synchromonic, super-imposed and straight line ringing.

NORTH N-54
dial mechanism protected by plastic dust cap.

NORTH N-541
new and better transmitting and receiving units . . . improved anti-side-tone circuit . . . 10 db gain over previous models. Compensating network . . . clear, natural "talking quality" on long or short loops.



NORTH N-541
dial is easily detached for adjustment or inspection. Smooth operation assured by extra large diameter governor. Non-stick gear train . . . no worm gears.



NORTH

...your favor...

Ever notice how your telephone business resembles a chess game? Make the right moves and you'll always have the odds in your favor.

Take for instance the selection of equipment. You are open to certain checkmate if you make your choice on any other basis than . . .

> What quality of service will it provide my customers?
> What impression of my company will they get from it?
> What will it cost to maintain?

To visualize "a move in the right direction" analyze the plus features squared in at left. You can see how you can be sure of "odds-on" service *and* public relations . . .

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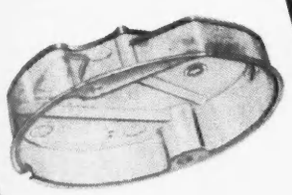

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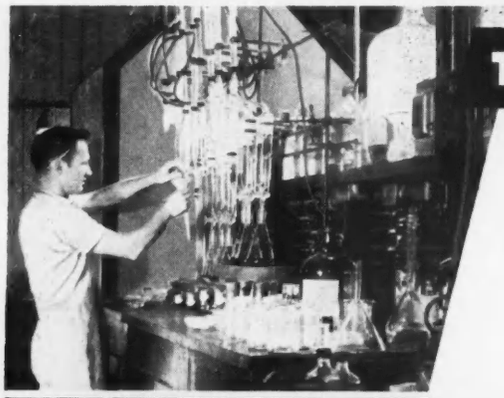

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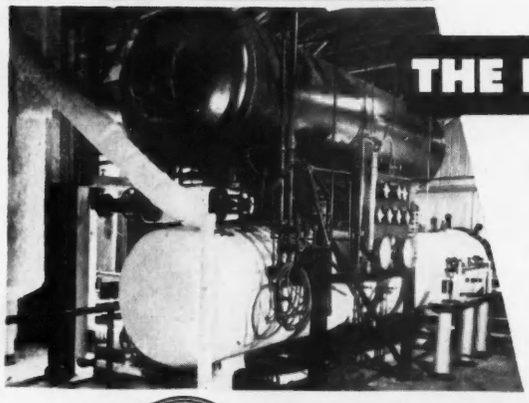

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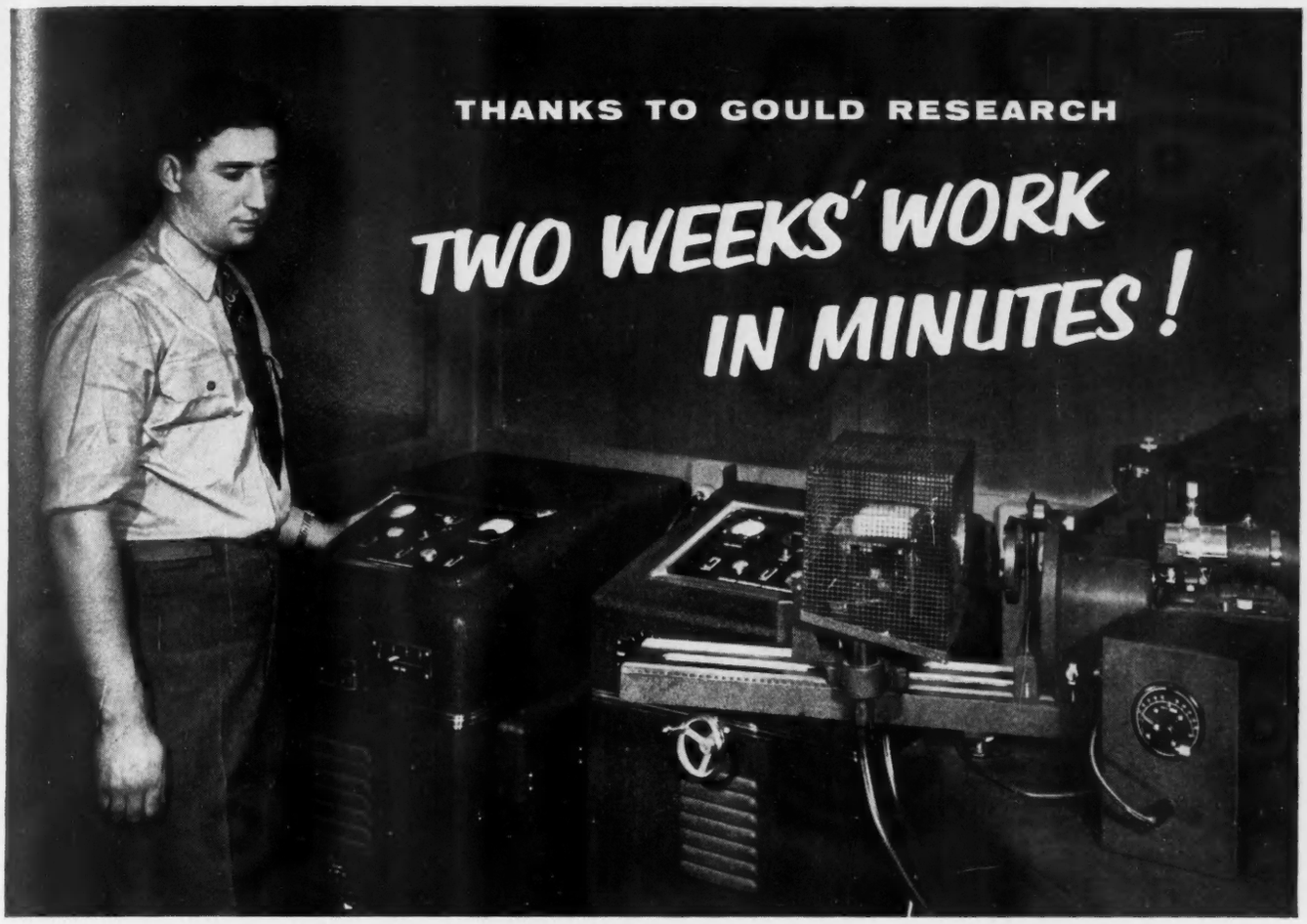

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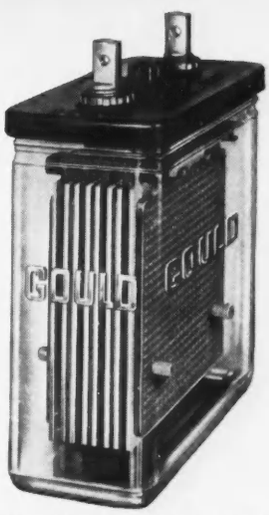

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Industry NEWS Briefs

This is your department. The editor wants news regarding your company. Send news items and photographs to News Briefs' Editor, 7720 N. Sheridan Rd., Chicago 26, Ill.

U S I T A and Texas Tel. Association Protest Bell Purchase of Tomball, Texas

THE TEXAS Telephone Association and the United States Independent Telephone Association on Feb. 7 filed with the Federal Communications Commission a petition protesting acquisition of the *Tomball (Texas) Telephone Co.* by the *Southwestern Bell Telephone Co.*

This is the first protest of its kind which has been filed in many years with the Federal regulatory body. It was presented at a hearing in Washington (Monday, Feb. 7) in F.C.C. Docket No. 11245 by Ross, Marsh & Foster, Attorneys for the Association.

The petition makes the following major points:

(1) That the reasonable value of the property is far less than the contract purchase price, which is excessive.

(2) That approval of the acquisition would aggrieve members of the national and state associations by denying them an equal opportunity to compete in the acquisition at a fair and reasonable price; and that approval would establish a precedent sanctioning the sale of other Independent properties without regard to the relationship between reasonable value and sales price.

(3) That the proposed acquisition would not be in the public interest because the price to be paid would place an excessive cost on subscribers.

(4) That approval of the acquisition would aggrieve the Independent industry by strengthening the Bell System position at the expense of the Independent branch, and also by depriving Independent manufacturers of an outlet for their products.

(5) That the public interest requires preservation of the stability and strength of the Independent industry; and it would not be in the public interest to permit encroachment by the Bell System into areas where the Independents stand ready and willing to provide service equal to that proposed by the Bell System.

(6) That despite Bell System espousal of a policy of preserving the Independent industry from encroachment, the Southwestern Bell negotiated an option to buy the Tomball property without notice to the Independents.

(7) That the protection of the position and stability of the Independent industry is a prime objective of both national and state telephone associations.

The Tomball Telephone Co., located 30 miles north of downtown Houston, operates 872 telephones.

25th Anniversary For General of Indiana

GENERAL TELEPHONE Co. of Indiana, Inc., observes its 25th anniversary this year. The company, second largest telephone utility in the Hoosier state, has lined up an anniversary program on the theme "Growing with Indiana."

A special emblem emphasizing a "Quarter Century of Service" has been adopted for use on letter head and posters. Special book matches are being prepared for distribution at all principal exchanges. The larger exchanges will have open house for public education.

Another highlight of the anniversary plans is an illustrated booklet telling General of Indiana's story and showing, among other things, the contrast between old and new telephone equipment.

General of Indiana was first organized February 5, 1930, as the Indiana Commercial Telephone Corp. and began operations in 1932 with the consolidation of 11 companies serving 41,032 stations in 27 exchanges. The name was changed in 1931 to Indiana Associated Telephone Corp., then in 1952 the name of General Telephone Co. of Indiana, Inc., was adopted.

The company's rapid growth since 1930 is best visualized by a glance at its current figures: More than 130,000 telephones served through 69 exchanges in 222 communities.

From 1942 to the end of 1954, the company's number of telephones more than doubled.

The company's most recent property purchase was at Bristol, in the northern part of the state. This magneto exchange, numbering nearly 500 stations, was bought in November 1954 and became the firm's 69th exchange.

When the company started operations in 1932, of the 27 exchanges only two were dial-operated: Lafayette and Union Mills. Of the 41,032

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telephones at that time, only 22 per cent were dial. At the end of 1954, General of Indiana reported 64.33 per cent of all its telephones were dial-operated. Of the rest, 31.66 per cent were common battery and 4.01 per cent were magneto.

The company had 13 magneto exchanges at the start of the year, but, according to Herbert E. Hussey, president, the company is planning to convert all of them to dial in 1955.

The company's construction budget for 1955 — a total of $4,347,000 — is the largest in company history. In addition to dial conversions, General of Indiana has many other projects marked for work this year.

$800,000,000 In New Capital Needed By Bell In 1955

ABOUT $800,000,000 in new capital will be needed by the Bell System for major projects planned in 1955. This is about the same as was needed in 1954 but somewhat under the '53 total of $1,142,000,000.

Major projects being carried forward to 1955 include: expansion of the program of direct distance dialing by customers; laying of the first trans-atlantic telephone cable; extension of television transmission facilities, both color and black and white; and continuing research and development in electronics for both military and civilian needs.

Total new construction in '55 is expected to exceed the $1,400,000,000 spent last year and in '53. The year's new capital requirements will be met from a combination of: public sale of securities; funds realized on conversion of debentures into stock; employe stock purchases; and internal corporate funds.

The Bell System started the new year with less than 200,000 held orders for service, about half of the number held a year ago. Obvious objective in 1955 is to reduce this number even further.

Dial conversions will be stepped up this year. Five year objective for the System is to reach 95% dial development. Currently, 83% of the System is dial.

Karl Mohr Joins North-West Tel. Co.

HARRIS G. ALLEN, president of North-West Telephone Co., Tomah, Wis., has announced the appointment of Karl W. Mohr as general manager. He succeeds Lester R. Gilbertson who recently resigned.

Mr. Mohr has a background of 28 years experience in the telephone industry, and with the exception of three years in Iowa, all of his business life has been spent in Wisconsin. He is widely and favorably known by telephone people in Wisconsin.

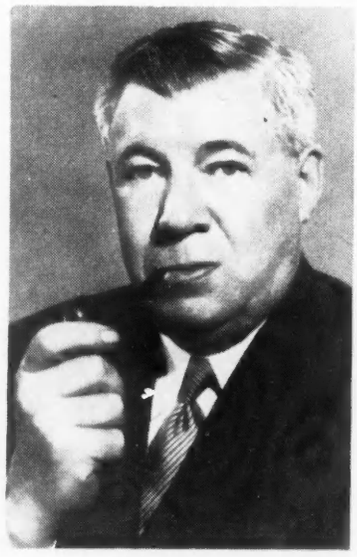
Mr. Mohr is a former president of the Badger Chapter of the Independent Pioneer Telephone Association, and he has also served as a director of the Wisconsin State Telephone Association.

Peter Millar Retires: J. F. Mills Named to Post

PETER MILLAR, commissioner and general manager of the Manitoba Telephone System, retired from that position on August 31, 1954. He continued to serve in a consulting capacity until December 31.

Peter Millar was born in Glasgow, came to Winnipeg in 1909 and joined the Telephone System. In 1939 he became Auditor of the System, a promotion which was followed by his being appointed comptroller in 1940.

In 1943 Mr. Millar was loaned to the Dominion Government for important war-time duties as general manager of a Crown company, Defence Communications Ltd., involving charge of long distance communications from Ottawa east. Later, he returned to the System and, on March 1st, 1945, was appointed commissioner and general manager.



PETER MILLAR

Officially retired on August 31,

London "Economist" Urges Increase In GOP's Depreciation Accruals

POINTING OUT that the depreciation accrual program for the telephone operations of the British General Post Office is not adequate to modernize the plant, the *London Economist,* recognized authoritative publication in its field, in its mid-December issue advocated that the element of "subsidy" should be eliminated from the GPO's rate structure, particularly for local telephone services, to provide more capital for construction to meet the continuing demand and to enable the GPO to reduce its unfilled order backlog and to provide upgraded service.

The analysis of GPO covered the Post Office's account for the year ended March 31, 1954, which was made public the first week of December. The *Economist* cited that the depreciation accruals, accumulated by the GPO under allowances permitted to be retained by the British Treasury, is not enough to replace the plant at present costs and "therefore public capital is being consumed faster than it is replaced." The *Economist* expressed the view that an increase of 50% in the depreciation charge is needed.

The 5,500,000 pounds recorded as surplus from the past year's telephone operations by the GPO was termed as not "in strict logic" surplus and "the telephone service at its present price contains an element of subsidy." The "queue" still continues for the British public in telephone service, with a backlog of 376,000 unfilled orders, the same as in earlier postwar years, the *Economist* noted. The GPO was given credit for its coaxial cable expansion for trunk (toll) service.

Telephone rentals (local exchange service) "clearly," the *Economist* stated, ought to stand the "bulk of any increase." The magazine declared that "it would be a reasonable policy for this nationalized industry, not to aim at a high profit, but to raise its prices until the element of subsidy has disappeared."

1954, from the position of commissioner and general manager, held during a period in which the Telephone System experienced the greatest development in its history, more than doubling its services to the public, Mr. Millar was retained in an advisory capacity on the telephone rates study until the end of the year.

Mr. Millar is a past president of the Trans-Canada Telephone System; of Manitoba Chapter Number 50, Telephone Pioneers of America; and of the St. Andrews Society of Winnipeg.

J. F. Mills, M.E.I.E., president of Siemens Brothers (Canada) Ltd., was appointed commissioner and general

J. F. MILLS

manager of the Manitoba Telephone System, effective September 1, succeeding Mr. Millar.

Mr. Mills was with the Siemens Company from 1926-'36 and in 1930 was given a special telecommunication engineering course in the company's main factory at London, England.

Following service in the Manitoba Telephone System, 1936-'52, which included appointment as chief engineer in 1945, to which was added that of assistant general manager in 1948, Mr. Mills became vice-president of Siemens Brothers (Canada) Ltd. in 1952 and president in January 1954.

Ralph Hyle Quits Government Post

RALPH M. HYLE has resigned as assistant chief of the Management Section of the Rural Electrification Administration to devote his full time

Continued on Next Page

Gen. Tel. of Calif. Announces $100,000,000 Expansion-Improvement Program

OUTLINING A $100,000,000 expansion and service improvement program for General Telephone Co. of California for the next three years, Edwin M. Blakeslee, company president, announced plans for bringing additional and improved telephone service to the territory served by the firm.

This 36 months' schedule calls for expenditures of $37,787,800 in 1955; $33,000,000 in 1956; and more than $32,000,000 in 1957. "We are furnishing telephone service in many of the fastest growing areas in Southern California" Blakeslee said, "and our 3-year plan has been carefully designed to allow for long range expansion and immediately care for several critical sections where unprecedented population expansion has caused us to build up a backlog of orders."

For example, the EDgewood number area covering the East San Gabriel Valley has been allocated $6,500,000 for the next 12 months to meet the rapid influx of new people, businesses and industries and also fill about 6,000 delayed orders.

Among the most significant achievements in 1955 will be the establishment of a new million dollar dial system in Lancaster scheduled for December. This improvement also includes a long distance toll center, business office and supply and maintenance facility.

Blakeslee pointed out that his company is better than 98% dial operated which is well above the national average. Plans have been made to change Santa Paula and Reedley to dial which will make the system fully automatic by 1958. More than 100,000 telephone numbers will be changed in Long Beach and a new prefix added to conform to the nation-wide numbering plan and to prepare this area for direct-dialing service to the Los Angeles Extended Area.

The company estimates it will add 50,000 new telephones next year after having established a new 25-year record in 1954 by gaining 61,132.

General began construction of nine major buildings last year — in Redondo, Long Beach, Upland, Covina, Glendora and two in Lancaster. Ground was broken last September

E. M. BLAKESLEE, president of General Tel. Co. of Calif.

for a new 3 million dollar general office building in Santa Monica. Eight buildings were completed in 1954 throughout General's territory. Total expenditures for all types of improvements during the last 12 months was in excess of 30 million dollars.

New automatic toll ticketing equipment to provide direct-dialing service for customers in West Los Angeles and the Santa Monica Bay areas will be placed in service starting March 1. This will enable telephone users in these two areas to dial more than 1½ million additional telephones in the Los Angeles Extended Area without the assistance of an operator. This 10-million dollar undertaking utilizes the latest automatic switching equipment developed by the telephone industry.

The company provides service in seven counties with more than 634,000 telephones extending north to San Joaquin Valley, south to Laguna Beach, east of San Bernardino and including most of the coastal area from Laguna Beach to Santa Maria. It serves about 25% of the population of Los Angeles County. Since the beginning of 1948, it has more than trebled its telephone plant which now is in excess of $191,000,000. General by far the largest Independent (non-Bell) company in America is one of the fastest growing telephone utilities in the nation and expects to install its 1,000,000th telephone by 1964.

Trends In Telephone Rate Matters And Recent Developments

The last quarter of 1954 saw a definite trend among certain state telephone regulatory bodies and courts to recognize more clearly the need of telephone companies to earn a fair return on the fair value of their investment, W. G. Wright, president of General Telephone Company of the Southwest, said last month.

This is particularly important, he added, if the flow of new money into the telephone industry from equity investors is to be maintained and thereby permit keeping abreast of service requirements and in step with modern developments in the art of telephony.

In reviewing decisions of regulatory commissions and state courts in telephone rate matters made in recent months, Wright cited several pertinent examples:

(1.) The Arizona Corporation Commission in granting a rate increase to the Mountain States Telephone & Telegraph (Bell) Co. recognized a fair value rate base (average between book cost and reproduction new cost) together with a rate of return on such rate base which allowed for a projection of expected results for two years into the future. Also, an added earnings allowance was made for the effect of "attrition" over the same period, i.e., the continued rising costs *per telephone* under inflation for such items as investment, depreciation and taxes.

(2.) The New York Public Service Commission granted the Rochester Telephone Corp. (non-Bell company) a major rate increase, in connection with which, Commissioner Glen B. Bedenkapp stated, "It would be little less than tragic at this critical juncture in its (Rochester Company) forward progress, if the company were denied the means to attract, on reasonable terms, the large volume of additional capital it requires for the fulfillment of its ambitious program."

(3.) The Michigan Supreme Court affirmed a lower court decision, holding that rates prescribed by the Michigan Public Service Commission for the General Telephone Co. of Michigan were "unreasonable, unlawful and confiscatory." As a result, the telephone company is continuing to collect under bond the full amount of the increase originally applied for pending the Commission compliance with the Supreme Court ruling which also held that "every reasonable effort should be made by the Commission to pass judgement on facts that will not only reflect upon the present but a reasonable period in the future."

(4.) The Ohio Utilities Commission recently granted the Ohio Bell Telephone Co. an increase in tariffs amounting to 86% of the amount requested. In the state of Ohio the utilities are allowed earnings predicated upon a reproduction cost new rate base.

Summarizing the rate increases granted to all companies in the General Telephone System during 1954, Wright stated that the increases represented an increase in gross revenue of over four million dollars annually.

It is significant, Wright said, that despite this trend elsewhere in the United States, in the three largest rate cases in which decisions were handed down in recent months on applications made by the General Telephone Co. of the Southwest before the State Commissions in Oklahoma and Arkansas, and before the city commission in San Angelo, Texas, in no case was any recognition given to current day costs in the rate base nor was the rate allowed on these restricted rate bases adequate to allow the company to attract new capital for investment in those areas. This situation, he said, if allowed to continue will have a definite adverse effect upon the development of communication facilities in these areas as contrasted to the national trend.

In conclusion, Wright stated that "insofar as the General Telephone Company of the Southwest is concerned granted adequate rates, we shall continue our program of progress which will provide for even better telephone service in 1955."

(Continued From Page 21)

to the presidency of the Lycoming Telephone Co., Pine Grove, Pa., which serves almost 4000 stations in four counties. Mr. Hyle and a brother, L. C. Hyle, direct operations of the company.

From 1951 to early 1953, Ralph Hyle was on the staff of the Communications Equipment Division of the National Production Authority. He then transferred to REA, where he prepared manuals of procedure for Independent telephone companies which received government loans.

B. C. Telephone Co. Advances Harold Bourne

HAROLD G. BOURNE, formerly Mainland division commercial manager of the British Columbia Telephone Co., has been appointed general commercial manager. Mr. Bourne, a veteran of 28 years with

HAROLD G. BOURNE

the company, supervised acquisition of US Army landline facilities on the northwest staging route from Edmonton to Alaska during World War II, and served as a signals officer with the Royal Canadian Air Force.

He succeeds Gordon L. Frost, who continues with the British Columbia company in a management advisory capacity, pending retirement at a later date.

Western Union Names Three Assistant V.P.'s

APPOINTMENTS of three new assistant vice presidents were announced last month by S. M. Barr, vice president-plant and engineering of the Western Union Telegraph Co.

Charles M. Brown was given re-

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sponsibility for applied engineering and the installation of all telegraph equipment in the Western Union systems; William H. Francis will superintend planning of future telegraph plant, field engineering, and construction of all outside plant; and Ray Hoover will be in charge of maintenance of plant and equipment, and the technical operation of circuits in the landline system.

All three entered the Western Union service after graduating from engineering colleges. Each has had an important part in creating today's mechanized Western Union system.

Indiana Bell Reduces Charges For Operator Assistance

A REDUCTION in the charges for operator service performed by Indiana Bell Telephone Co. has been reported to Rural Electrification Administration telephone borrowers by Assistant Administrator J. K. O'Shaughnessy, who described the change as of "substantial benefit to REA borrowers and other connecting companies."

The new schedule, effective Jan. 1, calls for a monthly charge of eight cents per main line telephone for assistance, information, alarms, and intercepting, and one-tenth of a cent per circuit group per route mile per main line telephone for use of operating company interexchange trunks.

Arkansas Commission Denies Rate Boost

AN APPLICATION of the General Telephone Co. of the Southwest for a rate increase that would have produced about $302,000 annually in additional revenues has been turned down by the Arkansas Public Service Commission.

The regulatory body found the company entitled to $35,240 more revenue but ordered that it be received from increases in charges for private branch exchanges, miscellaneous equipment and service charges, and an increase to 10 cents for pay telephone calls.

Illinois Commission Denies Illinois Bell Rate Hike

THE ILLINOIS Bell Telephone Co. was denied a rate increase of $24,900,000 last month by the Illinois Commerce Commission (ICC).

The boost would have applied to the 2,958,445 telephones of 1,988,199 users in Chicago and 345 other Illinois communities. It would have hiked residential rates 75 cents or more monthly and business rates $2.40 or more.

The ICC said the company is making a "fair return" of 5.5 per cent.

W. V. Kahler, Illinois Bell president, announced a rehearing will be asked. In his statement he said: "I can only express regret that our evidence in the case was not given weight in the decision. While realizing that judgment enters into fixing such factors as fair value and rate of return, it's hard to understand an order which denies all our proposals."

The company had won three increases totaling $70,335,000 in the past seven years. Denial of the fourth increase was based primarily on the ICC finding of a "fair value" of the company to be $627,000,000 on which the return was 5.5 per cent. The company had given its fair value as $721,479,197 and its return as 4.5 per cent.

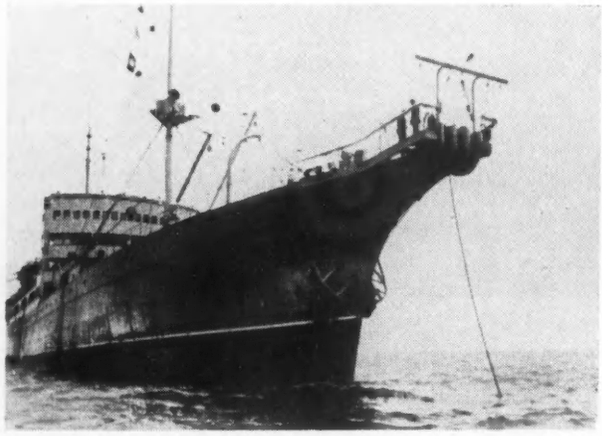
The ICC granted the company increases totaling $25,378,000 on Dec. 5, 1947. On Nov. 11, 1949, a boost of $22,795,000 was approved, and on appeal to the Winnebago County Circuit Court the company won an additional $5,644,000. The next increase, amounting to $16,518,000, was granted by the Illinois Supreme Court, April 16, 1953 on the company's appeal of ICC refusal to approve the boost.

The petition acted on last month was filed Feb. 19, 1954.

There were 113 days of hearings, making the case the longest telephone company matter ever heard by the commission. ICC Examiner William E. Helander heard 33 witnesses. There were 171 exhibits. The company maintained the new increase

British Report New Plant Constructed To Build Cable For Trans-Atlantic Link

A NEW FIVE-ACRE manufacturing plant to construct cable for the first transatlantic telephone cable has been built near Greenwich, England, and a $14,000,000 contract for the greater part of the Scotland-Newfoundland deep water cable has been let, the British Information Service has announced in a review of progress on the cable.



The HMS Monarch, will handle the cable-laying job.

The plant, owned by Submarine Cables, Ldt., will employ more than 200 persons, and will be capable of turning out 4000 miles of cable a year, it was reported.

In the review, the British Information Service said that "there is only one ship in the world capable of laying such a length of cable — HMS Monarch, the General Post Office's cable-layer, and even this vessel has had to have the bow and stern sheaves enlarged for the job to a diameter of seven feet."

Not only will both transatlantic telephone capacity and transmission be improved by the cable, it was brought out, "but once it has proved itself and with production at the new cable plant rolling, there is no reason why further cables should not be laid if demand increases. It also appears to presage the laying of a transatlantic television circuit in the future."

was needed because of rising wages and costs of installing and keeping up new equipment.

The company said telephone wages have increased 133 per cent "on the average" since 1940. It has 40,992 employes.

Kahler said in his statement: "Just as most everything else costs more to produce, so it is with telephone service. For example, general wage increases alone have raised costs $10,000,000 a year since our last price increase in 1953. Increasing costs continue to outrun the slow regulatory process. In the past it has taken an average of 21 months to finally reprice our service. Our case of 1951 took over two years before appeals overruled the commission. This decision makes much more difficult our aim of extending telephone service to keep up with the many rapidly growing communities we serve — of improving our service where it is not as good as it should be — and of making available to our customers the results of modern research and development."

Rate Increases OK'd for Two Indiana Co.'s

THE UNITED Telephone Co. of Indiana, serving more than 55,000 telephones, has been authorized a rate increase of $415,000 by the Indiana Public Service Commission, and was given a month by the commission to file schedules producing the added revenue. The gross revenue boost is aimed at producing a 6% return for the company. United said in the hearings that it will convert all its magneto telephones to common battery or dial within three years.

The Indiana commission also approved a rate boost for the Rochester (Ind.) Telephone Co., totaling $34,000 a year.

Sanford Cousins Appointed Vice President by AT&T

SANFORD B. COUSINS, president of Northwestern Bell Telephone Co. since September, 1952, has been appointed vice president of American Telephone and Telegraph Co., in charge of public relations.

Mr. Cousins will succeed Bartlett F. Miller who was named A.T.&T. vice president in charge of merchandising, a new post.

A. F. Jacobson, an assistant vice president of A.T.&T. in New York, succeeded Mr. Cousins as president of Northwestern Bell. The appointments were effective February 1.

Before heading Northwestern Bell, Mr. Cousins was manager of Bell Laboratories in New York.

Juarez Telephone Rates Increased

TELEFONOS de MEXICO has reported authorization for an increase in Juarez telephone rates. The boost ranges up to 75%.

Residential subscribers will pay 25 pesos ($2) a month, plus a 15% tax. Business telephone users will pay 45 pesos a month plus the tax.

Telephone calls from Juarez to El Paso will cost 55 centavos each, a reduction of 50% from an increase previously authorized by the Mexican government.

Commission Revokes Telephone Franchise

THE MISSISSIPPI Public Service Commission last month revoked the franchise of Interstate Telephone Co., Leakesville, Miss., for failure to provide adequate service and named a trustee to operate the telephone service.

The commission had previously cited J. A. Miller, operator of the company for failure to render service and had given the company a three months period in which to improve it.

Secretary Lex White of the state commission said the commission ruled that the company had not complied with the order to improve the service. The commission named Joe P. Lamb as trustee to operate the telephone company.

New York Tel. Announces $200 Million Program

A $200-MILLION telephone expansion and improvement program, the biggest in the New York Telephone Company's history, was announced for 1955 by Keith S. McHugh, company president. The program compares with the previous record outlay of $194-million in 1952, and with more than $182-million last year.

Mr. McHugh said there is a steady demand for more telephone service. The new program will enable the company to meet that demand, he said, as well as to provide service of greater usefulness and convenience.

As one of the features of this huge program, all of Manhattan's 1,625,000 non-coin telephones will be able to dial calls direct to most northern New Jersey telephones by the end of the year. This is an increase over the present total of 617,000 with this service. The program also will add 288,000 new telephones — including 42,500 in Manhattan and the Bronx. Extension of dial service to 12 more communities and expansion of wide-range dialing to 13 additional localities in Westchester and Long Island are other components cited by Mr. McHugh.

"To carry out the statewide program, the telephone company will have to raise more $100 million of new capital money," the company president declared. "A program of this size presents many problems. The most serious of these is the fact that the rate of earnings has been declining steadily in the face of rising expenses and taxes . . ."

The largest part of the 1955 construction program, in terms of dollars, will go to meet the continuing demand for service. Some $153 million will be required to pay for new telephones, associated equipment and switchboards.

The addition of 288,000 new telephones will bring the total in New York State to a new high of 6,591,000. The program also will provide a higher grade of service for more than 100,000 party-line customers.

Under its growth program, the company will add eight new central office exchanges and replace 12 manual offices with dial service.

The dial expansion program will cost some $15 million in 1955, Mr. McHugh noted, and will bring this type of service to two Westchester, six Long Island and four Upstate communities. By changing 78,000 telephones to dial in 1955 the total with dial service will be 5,955,000, slightly over 90 per cent of the telephones in the company area.

Gulf States Report On Dial Projects

WITH TWO conversions now completed, the Gulf States Telephone Co., Tyler, Texas, is well underway on a dial conversion improvement program that will continue until mid-1955 in the East Texas Area, according to Oscar Burton, vice president.

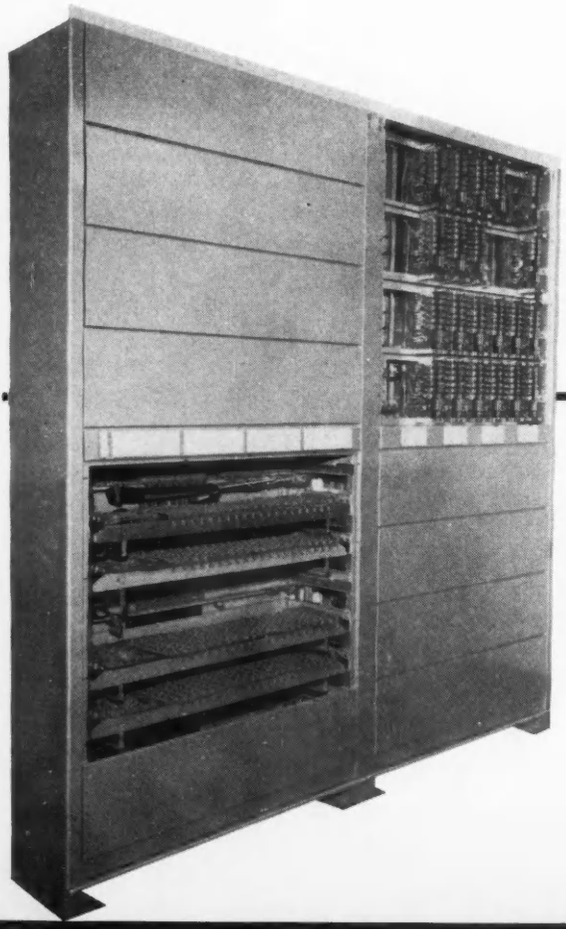
In August, 1954, the Bullard exchange, previously served by unat-

Please Turn To Page 30

CONSIDERING DIAL?

Then look to KELLOGG for the switching system that's just right for your requirements

It makes good sense to contact Kellogg if you are considering dial conversion, because Kellogg offers you the most comprehensive line of dial switching equipment to choose from in the Independent field today. Whether your operation is large, medium or small, whether your budget is a generous or modest one—there's a Kellogg dial switching system that can be tailored to your specific needs. These two pages will give you an idea of what we can do for you, and more detailed information is offered in the coupon below.



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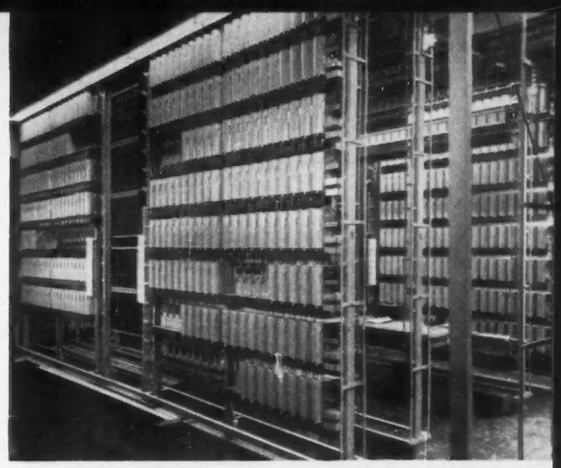
• Practically Eliminates Routine Maintenance • Drawer Mounted Switches • Lower Installation Costs for Additions • No Multiple Wiring • Full Station Intercept • PBX Grouping Service (without using consecutive numbers) • Maximum Expansion • Instantaneous Seizure of Paths without Hunting • High Traffic Capacity • Extra Long Life • Adaptable to Inter-Toll Dialing

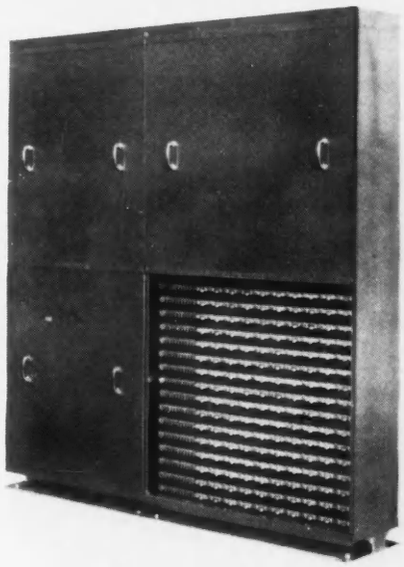
STEP-BY-STEP

• Long Life, Low Cost Operation • Ease of Maintenance • Simplicity of Equipment and Circuits • Compact Space-Saving Arrangement of Equipment • Trunking Flexibility • Ready, Low-Cost Expandability for Increased Station and Traffic Requirements • Each Switch a Separate Unit, Easy to Check and Adjust • Highest Service Standards



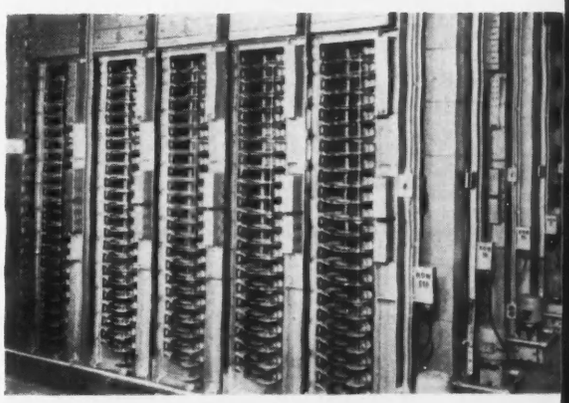
RELAYMATIC

• Dependable Automatic Switching • Accomplishes Complex Switching Operations Smoothly, Quietly • Simplified Installation • Easy Maintenance—All Wiring and Components Instantly Accessible • Simplified Wiring • Operates With Any Type of Trunk Line • Line Circuits May be Assigned for Common Battery Local or Rural, Trunk or Pay-Station Service • Local Lines Provide Up to 10-Party Selective Divided Ringing • Adaptors Available for Grounded Rural Lines



7-A2 ROTARY

• Motor Driven • Register-Type System • Revertive Pulsing • Rugged Construction • Extremely Long-Life • Especially Adaptable to Large Exchanges • Large Trunk Groups • Adaptable to Inter-Toll Dialing



MAIL COUPON to get complete facts on Kellogg Dial Switching Equipment. Your inquiry will receive immediate attention.

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Please send more detailed information on the following:

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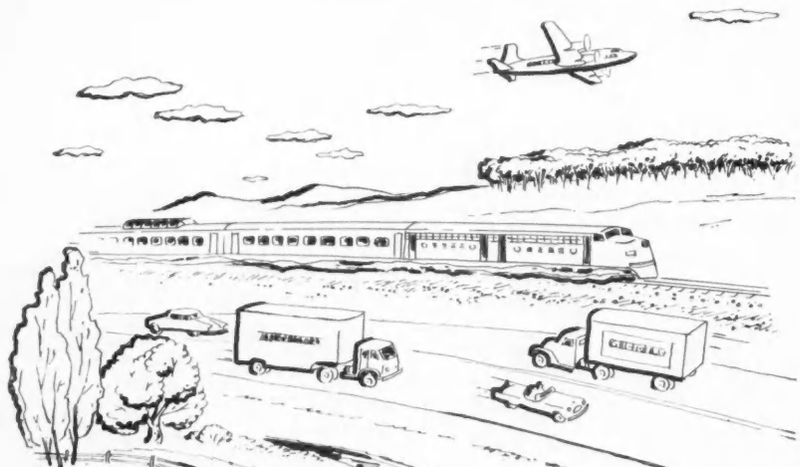
Your Nearest Kellogg Shipping Point is Never Far Away!



• Kellogg's six conveniently located warehouses and more than 100 supplier distribution points throughout the United States assure you the fastest, and most economical delivery of guaranteed, factory-tested line supplies.

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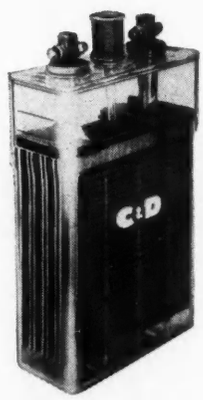
KELLOGG

Test of Time proves high quality of Hemingway Insulators — a product of OWENS-ILLINOIS. Many sizes and styles available for immediate delivery. No. 17, shown, used for all exchange circuits—for toll and trunk circuits not exceeding ten miles.

Tree Trimmers with famous downward cycle motion cut. Model No. 800 Trimmer, shown here, is designed for lighter work yet has same compound leverage as heavy duty trimmer. Cutting capacity a full inch. Made by NEWMAN MFG. COMPANY.



Extra-Life Telephone Battery —PlastiCal (lead calcium grids) have expected life of 25 years in full-float service. PlastiCell (high tensile special alloy grids) have a life expectancy of 14 years. Made by C&D BATTERIES, INC.

Write, Wire or 'Phone Your Next Order For Supplies To...

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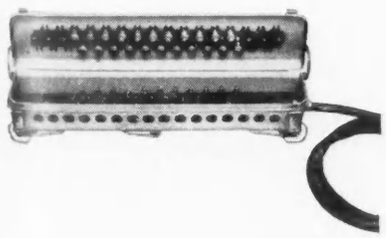
Simple and Effective! The quick, easy positive way to dry splices in lead covered cable is to sprinkle Drierite Dessicant granules in among the conductors. This W. A. HAMMOND DRIERITE COMPANY product will not harm the sheath, conductors or insulation.

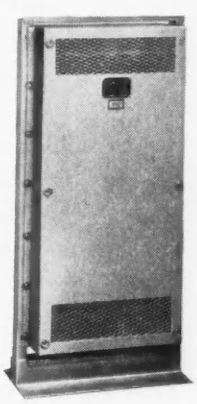
• • •

More Holding Power-Less Load Per Blade! — The Chance 8-Way Anchor distributes the load all the way around the hole. Expands to form a complete pyramid shaped square. Made in sizes from 60 to 200 square inches in area. Made by A. B. CHANCE COMPANY.

...for Line Supplies



The Cook Stranterm available with 11, 16, or 26 pair cable stubs. Only strand mounted Cable Terminal designed for flexible system of selective discharger protection. Supplied with plastic or lead sheathed cable stub. COOK ELECTRIC COMPANY.



S-5 Sub-Cycle for Synchromonic ringing. Generates 30, 42, 54 and 66 cycles plus a fifth frequency. Ringing frequencies are locked to the AC line frequency. Provides maintenance-free operation. Made by LORAIN PRODUCTS CORPORATION.

Peak Performance at Lowest Cost! Ge better voice and high frequency trans mission with COPPERWELD STEEL CO.'s Line Wire. It's non-rusting light in weight, easy to string. Per mits safer long spans with savings in initial construction and upkeep.

construction and maintenance DIGEST

- **Real cool sitting**
- **Die-hard battery**
- **Keep the charge**
- **Profitable noise**
- **Block that bolt**

Published every month to help you get the most out of your materials and supplies dollar

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

Cane-seat chair keeps operators cool, comfortable

Making the operator as comfortable as possible may not strike you as a "maintenance" problem – yet your service is much smoother when the girls are cool and relaxed.

This operator's chair has a cane seat, which is much cooler, cleaner and more comfortable than other types. It retains all the posture advantages for which Sturgis is famed. It is called the Sturgis SC-240.

The posture-curved, well-cushioned backrest is covered in genuine leather.

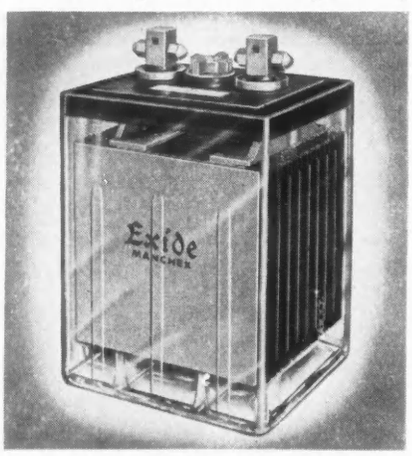
The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color, and a handy purse holder, available on request. Six seat heights, all adjustable.

Protect yourself from battery failures

You can use Exide Manchex Batteries for central office and private branch exchange equipment, and be sure you'll get a supply of power when you need it. These batteries have been proven daily in exchanges of every size, and for 67 years Exide Batteries have been serving the telephone industry.

The manchester positive plate with its exclusive button-type construction provides exceptionally



Old age, even high discharge rates, have little effect on this battery.

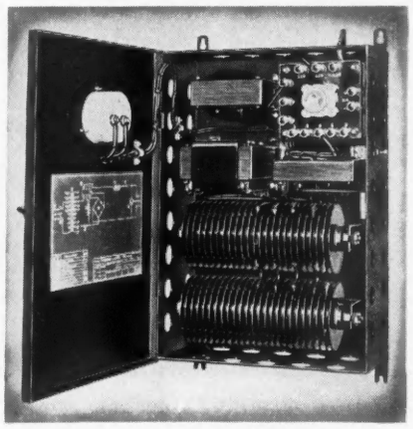
long life. Latest developments on molded glass jars permit compact space-saving installation.

Heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates. Microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions. Plastic spacers assure plate alignment.

Here's a charger that adjusts itself to match battery drain

Daily load demands can vary all over the lot. That's why you need a battery charger that adjusts its output automatically to maintain your batteries in peak condition.

Such a unit is the Electrox Automatic Battery Charger. That word "automatic" is a most important



A self-regulating battery charger that keeps your storage batteries in top condition and prolongs their life.

part of its name. The Electrox Charger will maintain a charging rate in proportion to the drain on the batteries within its rating.

The Type RB illustrated is completely automatic, with no relays, vibrators or tubes requiring attention or adjustment. Entirely noiseless, it continues to charge even while the telephone system is operating—with no hum or interference. Write for complete specifications.

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

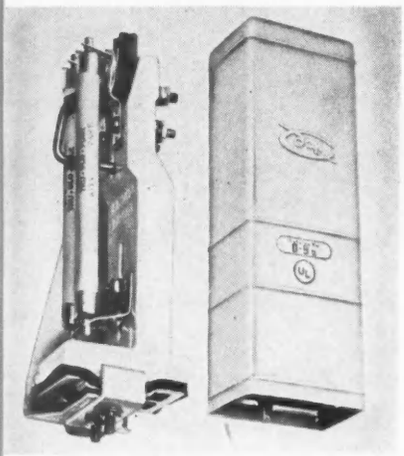
The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in

a spot as noisy as a boiler factory! It costs the subscriber less than a

booth—and you get the revenue! Ask us for complete details.

Protect telephones from lightning

No larger than a good-size candy bar is the Cook 09u telephone protector shown here. But it can save you a lot of grief and you can protect single circuits, both indoor and out.



Individual circuits are protected by small unit, measuring 6"x2½"x1¾".

The body is a single piece of heavy white glazed porcelain. Lightning arrestors are two Tru-Gap dischargers, two flat carbons mounted on a copper ground, and two A-9u 7-amp. lavite fuses. Neoprene gasket locks out insects, dust, snow, etc.

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Telephone Industry News Briefs

(Continued From Page 25)

tended dial equipment, was cut over to a larger capacity dial unit with harmonic ringing and the 2L-5N numbering scheme was first established to provide full inward intertoll dialing.

At Price a new dial system incorporating harmonic ringing was installed in December to replace an overloaded dial unit now serving 225 subscribers. Toll center for this exchange is at Troup with connections to Gulf States and Bell Company toll lines.

At Murchison, telephone service is to be re-established in May, 1955, following an 18-year lapse since the last exchange ceased operations. Unattended dial with toll service concentrated at Athens is being planned, incorporating 2L-5N numbering for inward toll service. Approximately 100 subscribers are to be initially served.

Leon Roberts Joins U.S.I.T.A. as Director of Information

LEON ROBERTS, former assistant to the president of the Illinois Telephone Co., Bloomington, Ill., joined the Washington, D. C. office of the U. S. Independent Telephone Association as U.S.I.T.A. Director of Information on February 1.

As Director of Information, Mr. Roberts is under the general direction of USITA Executive Vice President Clyde S. Bailey and assigned the following duties:

(a) Preparation and release to appropriate news agencies of information to promote the best interests of the Independent telephone industry.

(b) Coordination of the Association's national advertising program with the advertising agency concerned.

(c) Writing of Member Letters, to be issued regularly each two weeks and to be supplemented with such special letters as events may dictate.

(d) Maintain present active and associate memberships in the Association and secure additional members.

(e) Coordinate U.S.I.T.A. objectives with State Association officers and their activities.

LEON ROBERTS, new U.S.I.T.A. Director of Information.

(f) Correspondence with member companies on all matters except engineering or technical problems.

(g) Represent the U.S.I.T.A. at State Association Conventions when the U.S.I.T.A. President cannot attend. Only one representative of the National Association will attend State Association Conventions or Association committee meetings.

For the past 15 years Mr. Roberts has been intimately identified with the Independent industry, first as commercial manager of the Jamestown (N.D.) Telephone Corp. and later in public relations and other executive capacities with the Gary group of companies, with head quarters in Chicago, later in Portsmouth, Ohio, and still later in Bloomington, Ill. He has addressed the conventions of many state telephone associations. He was formerly Mayor of Jamestown, N. Y., and before that was a newspaper man.

Mr. Roberts was born in Indiana but spent his boyhood in Panama, N. Y., later moving to Jamestown. He and his wife will now establish their home on the banks of the Potomac. This fine couple has two children, both married. The addition to the Washington staff of a man so well qualified as Mr. Roberts reflects the continuing desire of U.S.I.T.A. to render a constantly improved service to the Independent telephone industry.

A flip of the switch automatically transfers calls from office to home

Subscriber Transfer Service offers

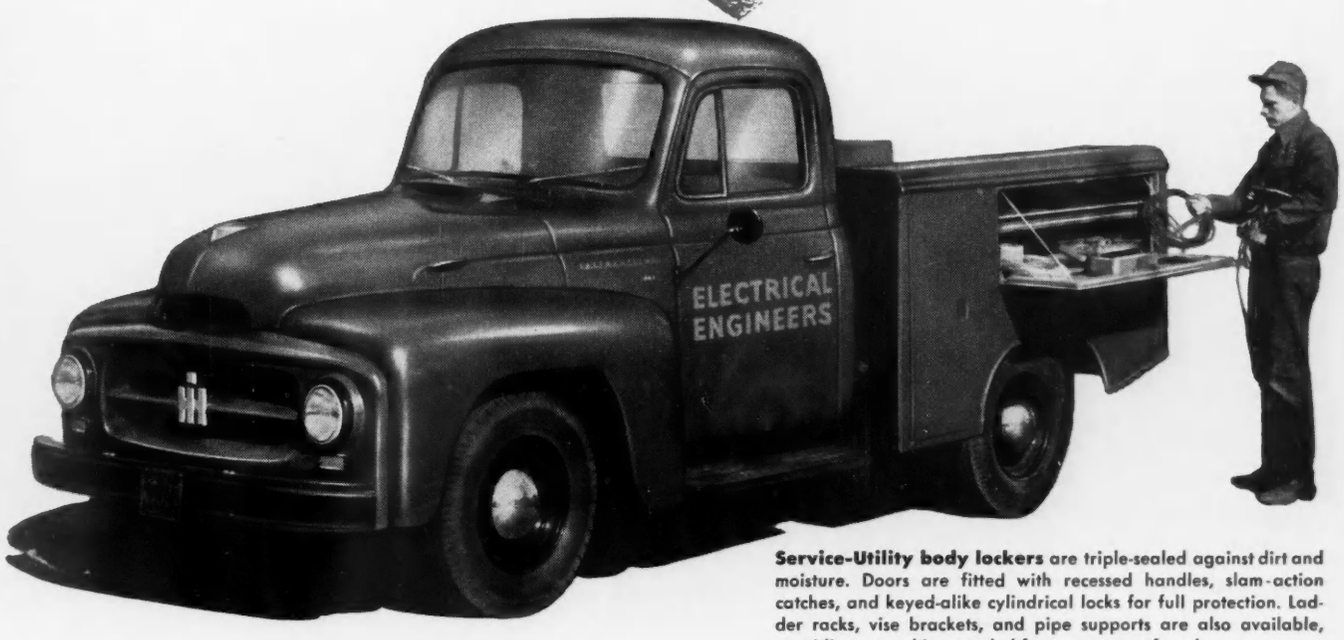
new income opportunity

Think of any subscriber who is "on call" at all hours – and you've found a customer for Subscriber Transfer Service! Doctors, lawyers, sheriffs, morticians, realtors – these and many others must have their business calls transferred to their homes or other points when they leave their offices. They need this dependable service – and will gladly pay extra for it. You get new income, plus a great deal of grateful appreciation!

Subscriber Transfer Service eliminates "night number" listings, which are often overlooked. Simply install in the subscriber's office a Type 40 Monophone equipped with transfer switch; install in your exchange a small relay unit connected by jumpers to the IDF – and you're ready for Subscriber Transfer Service. It's an immediate success wherever it is offered – a proved revenue-builder. For both automatic and manual exchange areas. To get full facts, write *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7.* Request Bulletin TM-622.

AUTOMATIC ELECTRIC

This mobile workshop cuts on-job cost!



Service-Utility body lockers are triple-sealed against dirt and moisture. Doors are fitted with recessed handles, slam-action catches, and keyed-alike cylindrical locks for full protection. Ladder racks, vise brackets, and pipe supports are also available, providing everything needed for every type of work.

INTERNATIONAL Trucks, with Service-Utility bodies, cut service call costs by bringing your workshop to the job. You make fewer trips, get more done per day.

The Service-Utility body provides all-steel lockers, with compartments of varying sizes, for orderly storage of all the tools, parts, and equipment needed to do a number of different jobs. Thus, there is no costly labor-time wasted in job-to-shop trips for needed or forgotten items.

And INTERNATIONAL Truck quality further lowers your operating costs. Famous INTERNATIONAL engines assure top performance with maximum economy. INTERNATIONAL Tough-Job engineering and all-truck design mean utmost dependability, long life, and lowest maintenance expense.

INTERNATIONAL Trucks with Service-Utility bodies are available in 9 models, with 77-in. body lengths for 115-in. wheelbases, 84-in. lengths for 122-in. wheelbases, 89-in. lengths for 127-in. wheelbases and 96-in. lengths for 134-in. wheelbases. GVW ratings, 4,200 to 8,600 lbs.

Ask your INTERNATIONAL Dealer or Branch for complete details on these time-saving, money-saving workshop trucks. Time payments arranged.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

International Harvester Builds **McCORMICK®** Farm Equipment and **FARMALL®** Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

See the season's new TV hit, "The Halls of Ivy," with Ronald Colman and Benita Hume, CBS-TV, Tuesdays, 8:30 p.m. EST

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"Standard of the Highway"

From a Winch Line Hook to a Line Construction Body Be Sure To Check With Us On Your Construction & Maintenance Equipment Requirements...

Line construction and Maintenance Bodies * General Service Bodies * Cable Splicer Bodies * Installer's Bodies * Platform Bodies * Pick-up Bodies * Pick-up Compartments * Pole Derricks and Accessories * Winches and power Take-offs and Accessories * Pole Trailers * Cable Reel Trailers * Combination Pole and Cable Reel Trailers * Cable Splicer Trailers * Aerial Ladders * Aerial Platforms * Sand Barrels * Draw Bars * Pole Binders * Payout and Take-up Reels * Collapsible power Reels * Towing and Pintle Hooks * Connecting Pins * Winch Line Cable

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How to write a clear, logical technical paper

Step by step this authoritative book tells you how to select the type of report you should use, how to choose the most suitable forms and style, how to organize the material, and how to use figures, tables, and annotations—in short, make the report that is clear and understandable and wins acceptance for its ideas.

WRITING THE TECHNICAL REPORT

By J. Raleigh Nelson

University of Michigan
College of Engineering,
Professor Emeritus of English.

Third Edition, 356 pages, 5½ x 8½, 238 illustrations, $4.50

This practical guidebook takes up scores of specific points in the design and composition of the report and gives you exact directions for the setup of both long- and short-form reports, with numerous examples to guide you. In addition, the book outlines a system for the critical examination of the report to help you make sure it will meet the requirements of those who will read and use it.

Telephone Engineer Publishing Corp.

7720 Sheridan Road Chicago 26, Illinois

—know your commissioners

Meet

Hon. Matt L. McWhorter

NINTH of a series of articles introducing members of state and national regulatory commissions and officers, directors and chairmen and committee members of the National Association of Railroad & Utilities Commissioners.

IN STUDYING the lives of men, researchers often discover that those who have contributed most to America's way of living were raised on farms where large families were the rule rather than the exception. And such a background certainly belongs to Matt L. McWhorter — now the Honorable Matt L. McWhorter, Chairman of the Georgia Public Service Commission.

A veteran of eighteen years in utility regulation, Matt McWhorter was born in the rural community of Stephens, in the Piedmont area of Northeast Georgia, on February 8, 1889, joining a family that was to grow until eight children — two boys and six girls — came along and gave Georgia's population a gentle boost upward.

And the McWhorter family was not only a large family. It was an important family. A family that contributed much to the rural community of Stephens through the large general supply and farming business operated by Matt McWhorter's father. We say contributed much, for in those days cotton was the principal crop and the supply merchant carried his customers through the growing period and collected at harvest time, supplying every need including cash and doctor bills.

Somewhere during those early days Matt McWhorter must have received his first lessons in service to the public, lessons that were to set up the pattern for his adult years.

After completing the courses at the common school of the Stephens community, he attended the Gordon Military Institute and the University of Georgia. He was attending school at the University of Georgia when his father died and he returned home to assist his mother in operating the business and educating his six sisters.

The HONORABLE MATT L. McWHORTER, Chairman of the Georgia Public Service Commission.

It was a big task for a young man but Mr. McWhorter applied himself and when he was twenty years old he entered the general supply and farming business. Shortly after this, things started happening for young Matt McWhorter. In 1912 he married his lifelong neighbor and playmate. In 1920 the price of cotton dropped from 46¢ in September to 10¢ in December. In 1921 the Boll Weevil dropped in for a feast and cotton production dropped from 236 bales in 1920 to 30 bales in 1921.

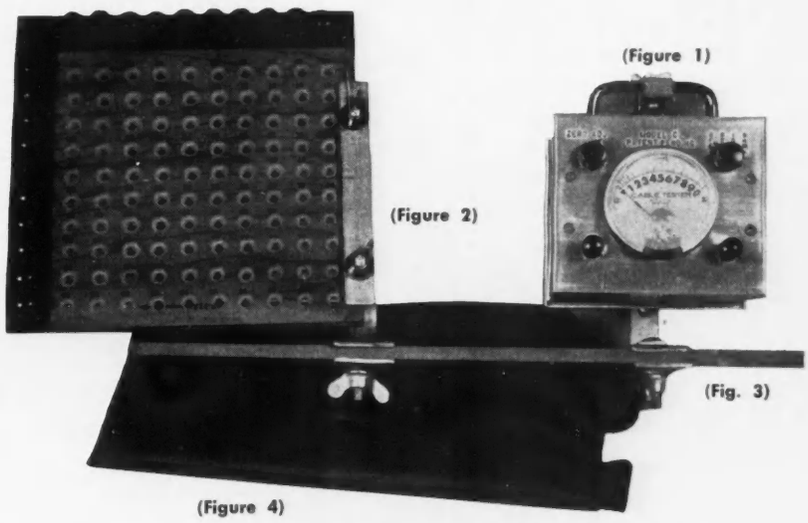
Mr. McWhorter tells us that the price drop and the Boll Weevil gave him "*a taste of the real facts of life.*" This taste left him with only a small

THE *Murphy* (ONE MAN) CABLE TESTER

NEW IMPROVED

Over 1800 of these TESTERS now in use in United States, Canada & Hawaii . . .

Now! . . . for the first time, ONE MAN can test to identify cable pairs and do it three times as fast as two men could formerly do the same work. "ONE MAN" splicing crews are now a reality. On new cable work, labor costs are reduced by from 30% to 50% depending on just how far you are prepared to go in utilizing the ONE-MAN crew.



(Figure 1)

(Figure 2)

(Fig. 3)

(Figure 4)

NOW WE CAN HELP YOU:

1 REDUCE cable splicing costs even more.

2 Make the splicers work EASIER.

3 Eliminate many troubles and delays caused by wrapping cableends.

4 Still further SPEED UP new cable splicing operations.

MODEL C METER UNIT (Figure 1)

Three Test Sets in one — The Murphy ONE MAN Cable Pair Identifier, The Buzzer Continuity Tester — and the Ohmeter for locating trouble. Heavy, long-life battery with special bracket clamp to hold it in place. Can't shift, can't short out — can't leak.

COMBINATION TAG & TERMINATING BOARD

Figure 2 (Model TTB) — Automatically sorts and groups the wires just the way you need them for connecting to the binding posts of the Terminal Board — only, in this case, the Terminal Board is built right into the Tag Board. Complete Directions with each unit.

DUAL PURPOSE CLAMP (Figure 3)

This clamp will hold the Terminating Board at any angle, above or below the strand — for greater convenience and speed in boarding a cable. The clamp can be used to hold the present standard tagboard in position while using the earlier type of Terminal Board. The same DUAL PURPOSE CLAMP is also used to hold the METER UNIT above the strand, right over the splice, at any convenient angle, for the greatest visibility of meter face.

THE NEOPRENE BAG (Figure 4) Model NP

The bag is simply slipped over the Terminating Board and taped down around the cable armor to seal out the weather. Bag is made of U. S. Navy Spec. High Tear Nylon Fabric covered on both sides with a heavy coating of Neoprene. Can be used over and over hundreds of times.

CARRYING CASES

Durable carrying cases are available for all units.

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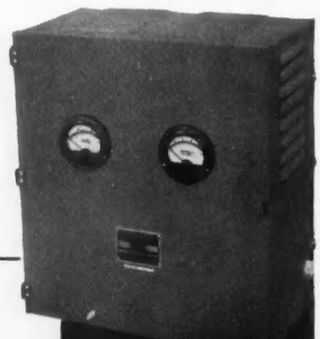
(BATTERY CHARGERS)

You can be completely carefree about battery charging with Raytheon RectiChargeRs on the job. They go on year after year following the load automatically — maintaining constant voltage output over the entire load range — keeping batteries fully charged — prolonging battery life by preventing over or undercharging — and require routine inspection only once or twice a year.

Striking proof of dependability is shown in the results of tests made on a RectiChargeR after 15 years of continuous service. Engineers found it as good as ever — not the slightest impairment of electrical qualities — no mechanical deterioration whatever.

In fact there's no reason it couldn't go on for many more years giving the same trouble-free service.

Dependability counts heavily in the Telephone Industry — one reason why Raytheon RectiChargeRs are so widely used.



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RAYTHEON PRODUCTS INCLUDE: RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Voltage stabilizers (regulators); Transformers; Tubes and other electronic equipment.

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Specify Raytheon RectiChargeRs and RectiFilteRs for completely dependable Telephone service. Your supplier offers a complete line for all requirements. Ask him for details or write direct.

Know Your COMMISSIONERS

(Continued From Page 34)

part of his original land, and since the land was a liability rather than an asset, Mr. McWhorter tried the lumber business. Then he moved to Atlanta where he was engaged in the real estate and building business until 1929, when (as he puts it) "*another storm struck.*"

Only two years after the "*storm struck,*" Mr. McWhorter became connected with the Utility Tax Division of the State of Georgia. In 1936 he became a candidate for a post on the Georgia Public Service Commission and was elected for an unexpired term of two years. This election started Mr. McWhorter on a new career, a career that led to his present post of Chairman of the Georgia Public Service Commission.

His wide interest in all phases of regulatory work with special emphasis on telephone regulation and the extension of telephone service to all rural areas of the state of Georgia has established Matt McWhorter high on the list of the nation's outstanding regulatory officials. This recognition was given special emphasis in 1947 when he was appointed Chairman of the Special Telephone Committee of the National Association of Railroad and Utilities Commissioners (NARUC). He headed this important NARUC Committee until 1952 when he asked to be relieved of the Chairmanship. Presently he serves as a member of the committee.

Despite his state and national regulatory duties, Mr. McWhorter has, through the years, retained his deep interest in farming operations. He maintains a home on the farm and has never changed his official residence — always voting in the place where he registered when he was 21 years old.

The farm, consisting of nearly 500 acres and a commercial herd of Hereford cattle provides Mr. McWhorter with a hobby — "a rather expensive one" he tells us.

All in all, the career of Matt McWhorter points up what we said at the beginning — "men who have contributed most to America's way of living came from large families in the rural sections." Mr. McWhorter is living proof of the truth of that statement.—THE END.

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BETTER BUSINESS METHODS

For Greater Profits Through Lower Costs

Special "Toll and Tax" Machine gives you toll statements with electric-typewriter speed ... and quickly changes to subscriber billing.

Special Toll Statement Machines Handle Subscribers Bills With Equal Speed

Now you can get touch-method machine accounting for your toll statements *and* subscribers bills inexpensively ... with either the fully electrified Remington Rand Model 83T or the new LOW-COST Bookkeeping Machine. Each quickly changes from toll statement billing to subscriber billing – or vice versa.

These Remington Rand Simplified Toll Billing Machines have *all* the features you need for highest toll billing production ... but no "extras" that would only increase costs. Any typist can operate them without special training. Toll charges automatically accumulate as they are written on toll statements. A special Toll and Tax mechanism automatically computes the total of the toll charges *and* the tax for each statement – allowing completion immediately. There's good reason for the great interest aroused at the recent USITA Convention in Chicago.

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The new Remington Rand LOW-COST Bookkeeping Machine can be switched from subscriber billing to toll billing in a few seconds.

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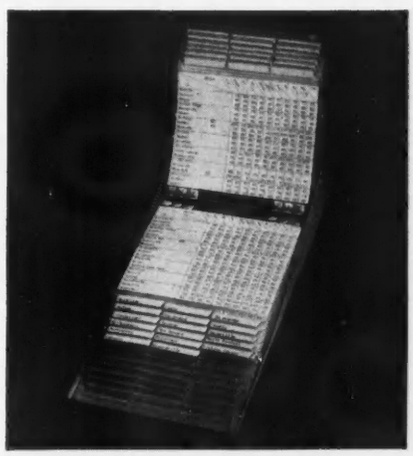
This complete information, now available at the flip of a pocket, enables operators to handle many long distance calls with greater speed and accuracy than by trunking to another source.

A similar directory, the Speedac Chaindex Reference Unit, Model 9940.2 has been developed for use at PBX switchboards. This unit can hold 1040



frequently called outside numbers and can't help but improve the quality of any company's external telephone communication.

For more details, circle **KD767.**

Remington Rand

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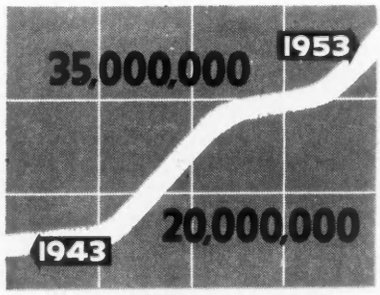

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• *Telephone instrument in photograph above manufactured by The North Electric Manufacturing Company, Galion, Ohio.*

United States Independent Telephone Association

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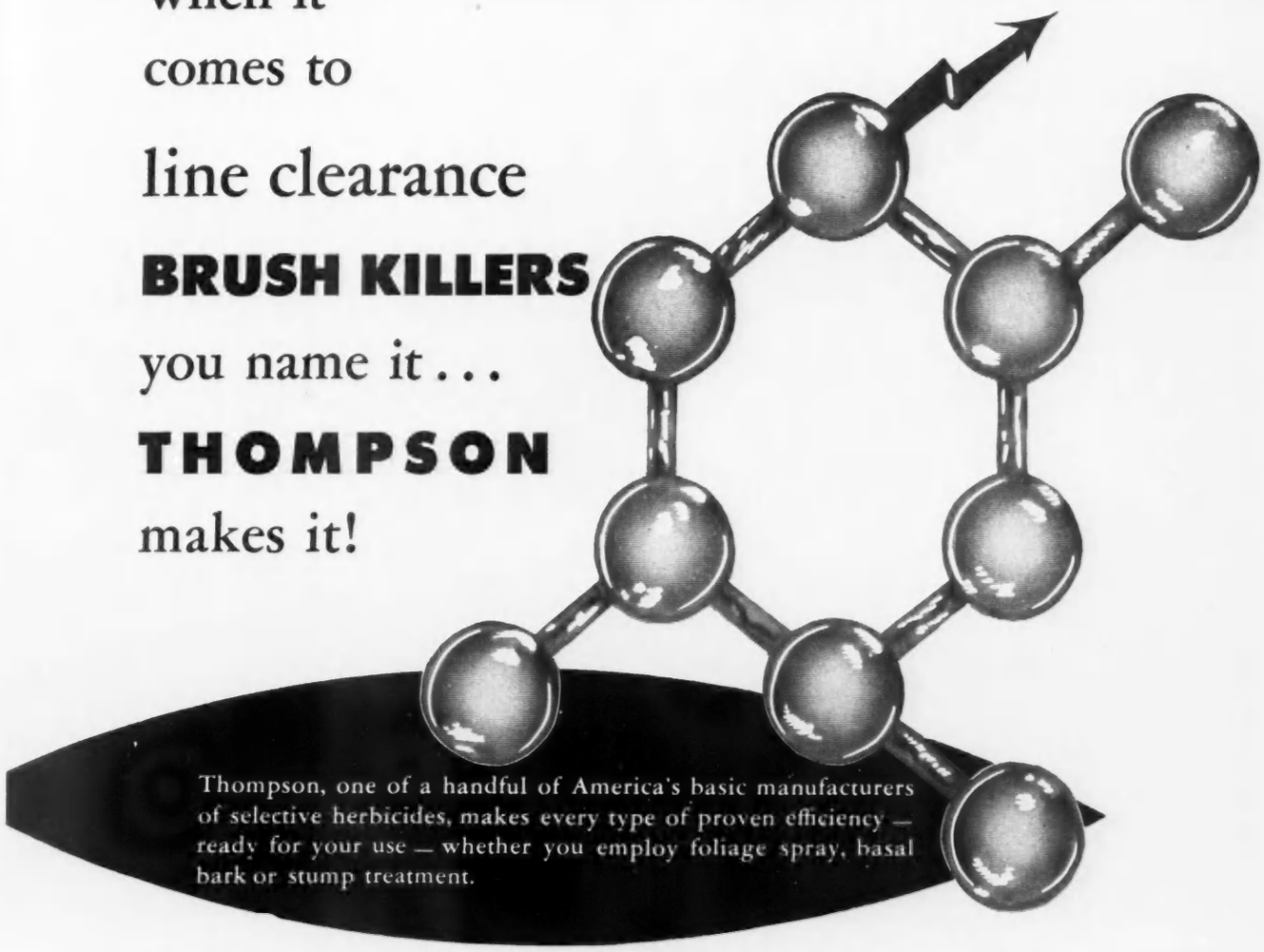

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for most efficient kill at lowest cost*

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**Write for station paper 19. It provides latest research on right of way herbicides, their selection and application.*

Spotlighting toll service—

CALCULAGRAPH

...speeds toll service

...protects toll revenues

Photo courtesy of
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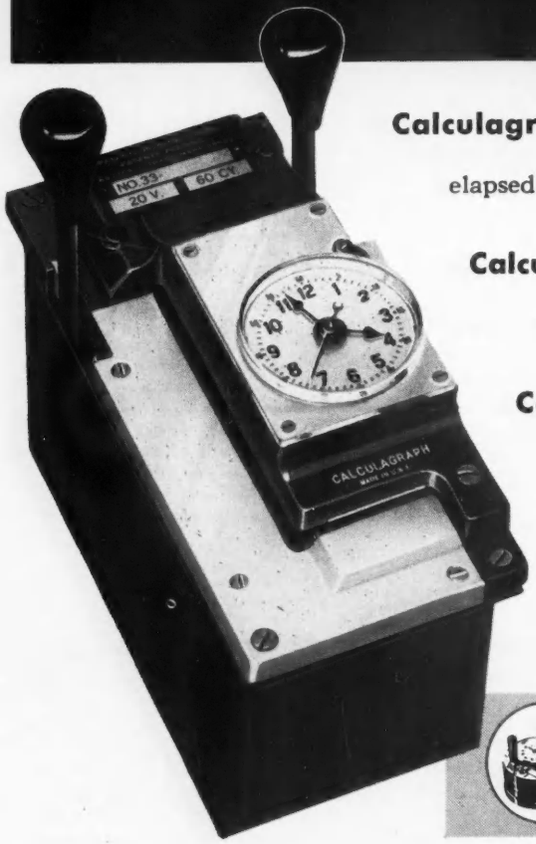

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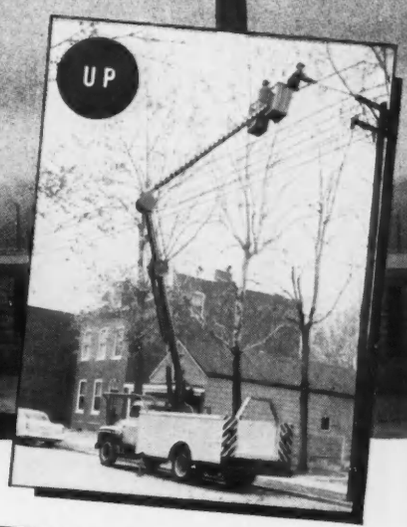
IN TWO SIZES... FOR ALL TYPES OF OVERHEAD WORK



SKY-MASTER carries two men . . . in reinforced plastic work baskets . . . to *any* point within its wide range of movement. The supporting mast, which rotates on roller bearings, can be revolved continuously . . . in either direction. The hydraulically-actuated inner beam can be moved to any point in an 85° arc, and the outer beam—actuated in combination with drive pulleys and ¼" wire rope—can be spotted in any position within a 265° arc. Movement of the beams and mast is controlled by three independent levers beside the work baskets. Hydraulic outriggers, on each side of the body, furnish absolute stability regardless of SKY-MASTER'S position. Insulation against 50,000 volts is provided by an abrasion-resistant covering on the outer beam.

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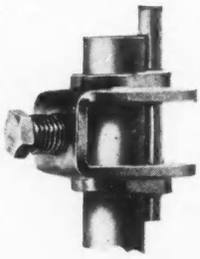
Field proved to maintain high pressure and maximum conductivity. Accommodates from ⅜" to 1¼" rod or pipe sizes.



RELIABLE
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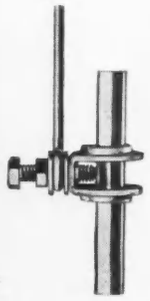
Bronze Clamps — for copper and copperweld rods. Three sizes: for ⅜" to ½", ½" to ⅝" and ⅝" to ¾" rods.

Galvanized Steel Clamps — for steel rods and pipes. Three sizes: for ⅜" to ½", ½" to ⅝" and ⅝" to ¾" rods.

LET'S GIVE THESE "OLD STANDBYS" ANOTHER THINK, BOSS!

Maybe you too have been taking those *small* essentials too much for granted. Why not *be sure* that your ground connections are dependably worthy of the time and investment you put into your plants? Use test clips that bite right in for a positive contact every time. Yes, those small things can be mighty important — that's why I suggest you standardize on Reliable Specialties, they're designed and produced to the purpose.



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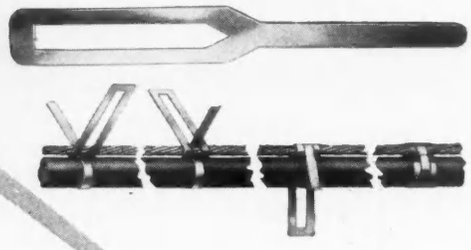
¾" to 4½" diameters — 7⅞" to 30" lengths.



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Firm spring grip
No. 1—Fitted with screw, nut, washer and spike
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Let me send you samples and prices on these essential specialties — and remember the name tells you the quality — Reliable.

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OVER 45 YEARS' SERVICE TO THE UTILITIES

Telephone Engineer

EDITORIAL

Telephone Engineer

Management Works To Improve Management

DURING THE past fifteen years or so there has come about in this country a new concept of the value of education to industry. Simultaneously there has come about, in many and important institutions of learning, a new concept of methods by which such institutions can cooperate with industry to educate and to develop better management personnel.

In consequence of these situations there is now going on, in a number of industries and in a number of important companies in such industries, a process that is sometimes termed "Management Development," and which is defined by one company engaged in it as "that part of the whole management job which has to do with the systematic supply, maintenance and improvement of management personnel."

In the telephone industry, in both the Independent segment of it and the Bell System, there are examples of such Management Development activities.

This whole subject is so big, and its ramifications are so many, that it is hardly possible to scratch the surface of it in the limited space of an editorial. A better understanding of it is obtainable from the article "Management Development," published in the September, 1954, issue of "TELEPHONE ENGINEER & MANAGEMENT," which describes in some detail the Management Development procedures and activities by several important Independent companies including California Water & Telephone Company, Southwestern States Telephone Company, and other companies of that group.

The Bell System's activities with respect to Management Development and the philosophy of the Bell companies on the subject were recently briefly described in a talk made by President Cleo F. Craig of the American Telephone and Telegraph Company before the annual convention of the Life Insurance Association in December.

Said Mr. Craig, in part:

> "Until better ways can be found, it seems worthwhile to us in the Bell System to take men and women off the job for long enough periods so that they can listen, think, read and discuss — get into their minds a broader concept of what their job really is — and strengthen their talent to carry it out. Further, it has seemed to me that the place to start is within the top management group itself — so that is where we are putting a good bit of our first effort."

Explaining that "we are just groping," but that a start must be made, Mr. Craig described the Bell System Executive Conference where, every month, forty department heads meet for a four week conference "to broaden thinking and outlook, to increase present effectiveness, and to stimulate interest in further self-development."

This whole proposition of Management Development, or whatever you prefer to call it, has in our opinion such tremendous possibilities that it is practically a "must" for any industry.

It is far broader, we think, than the thing we call education, valuable and important as that is. Education is the proposition of teaching things that are already known to the teacher. But Management Development, as we see it, is the proposition of developing and learning new and better things affecting the ideas, philosophies, procedures and acts of management.

In Management Development the horizon is without limit. For, as one Shakespearian character said to another: "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy."

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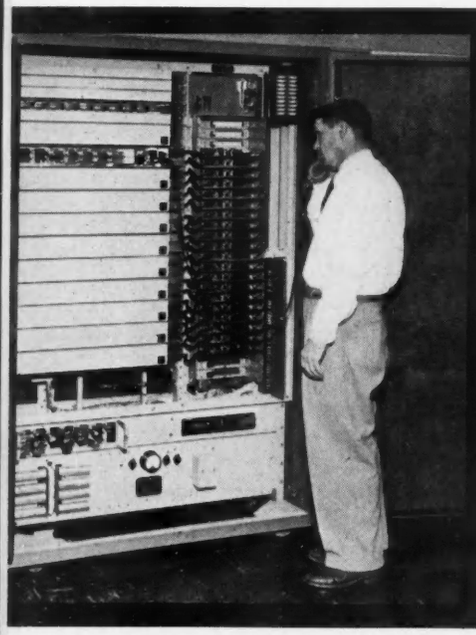
Here's your newest Revenue-Maker,
for small businesses which need a dial PBX

Stromberg-Carlson "F-40" XY® 40-line Dial PBX

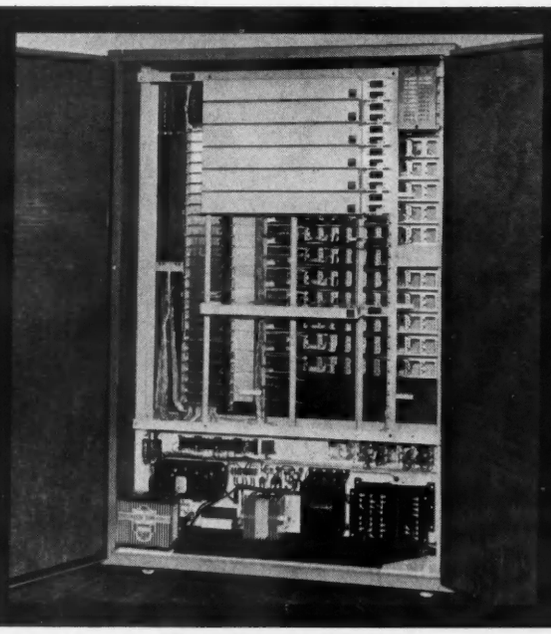
Now you can serve (and get nice income from) those business firms which badly need a compact internal dial system, with central office connections, but haven't a spare room or a lot of space for cumbersome bays, power supply, batteries and the like.

Stromberg-Carlson has "packaged" a system of top efficiency and modest cost, in a modern cabinet which looks just like a piece of office furniture. With capacity up to 40 local lines and 10 trunks, it is put into service merely by connecting the telephone cable leads and plugging the power supply into a standard 110-volt AC outlet.

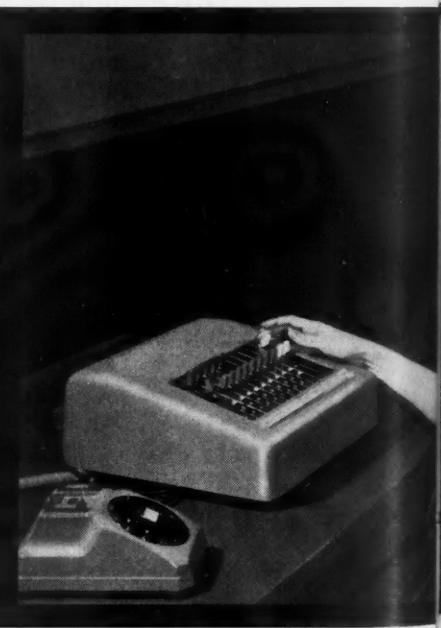
The possibilities of this new equipment deserve your serious attention. Our brochure T-146 tells *all*. Why not request a copy today?



Front interior, with a test being made. Note thick Fiberglas acoustical insulation on doors and sides.



Rear view of the F-40 cabinet shows power supply in base with stand-by battery.



Attendant's station which may use a gray Tenite telephone with or without standard operator's headset.

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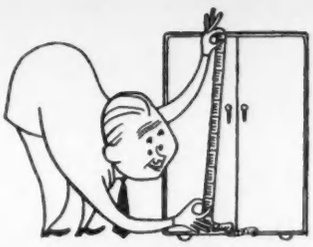
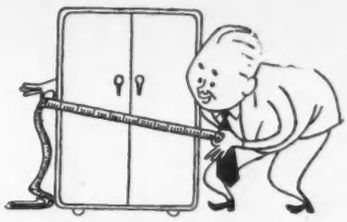


It's only this high (6′ 4″)



It's only this wide (4′ 1″)

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It looks like a regular office wardrobe

It rolls anywhere

Standard Features of the XY F-40

- Small size
- Mobility
- Soundproof (quietness)
- Ease of installation
- Single-party service
- Code call, if required
- Restricted service, by line marking
- Executive right-of-way
- Night trunk connections
- Two-digit numbering for stations, single digits for trunks
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Sold only as a "standard" package.

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INSIDE WIRING CABLE

TELECABLE INSIDE WIRING CABLE has semi-rigid Plastite ® insulation and brown or ivory Plastite jacket. It is light in weight and water resistant. Excellent electrical characteristics. Unaffected by humidity, TELECABLE inside wiring cable is ideal for duct work. Its long life assures low maintenance cost.

TELEPRENE®
NEOPRENE JACKETED DROP WIRE

Famous WB long life drop wire has demonstrated to the Independent Telephone Industry that a BETTER wire is much more economical than a CHEAPER wire.

TELECORD®

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The new standard original equipment cord of the Independent Telephone Industry.

The sturdy, long-lasting telephone cord that resists abrasion, perspiration, humidity, oil and grease. Specify TELECORD when you purchase telephones. On replacements use TELECORD for economy and service.

A full line of carefully engineered and manufactured wires and cables is available to meet your entire needs.

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The PREFERRED Cable of the Independent Telephone Industry

DEMAND is one measure of leadership. The preference of hundreds of independent telephone companies for TELECABLE has established the leadership of this great, new exchange area cable.

TELECABLE Exchange Area Cable for aerial and duct use has polyethylene insulation and polyethylene sheath . . . the thermoplastic sheath that provides the long life required of telephone cable. TELECABLE possesses excellent transmission qualities and extraordinary weathering properties, withstanding sunlight and extremes of atmospheric temperature. It is not subject to environmental cracking, it is light in weight, tough yet flexible.

TELECABLE Exchange Area Cable is REA approved under Specification PE-14.

TELECABLE is available for immediate delivery in No. 24, No. 22 and No. 19 A.W.G. in 11 to 202 pair.

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Poles pressure treated with creosote by Amcreco methods have high resistance to fungi, to insects, and have greater strength throughout the life of the pole. This means fewer replacements and lower maintenance costs with less service trouble. For your next job, contact one of our nearby sales offices.

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Washington Bureau Reports

By The Editors of "Telecommunications Reports."

TWO TELEPHONE industry officials — one from the Rochester, Ind., Telephone Co. and the other from the Pacific Telephone & Telegraph Co. — have assumed important new duties in the Business & Defense Services Administration of the US Department of Commerce. They will serve on a "loan" basis from their companies for about six months.

Hugh A. Barnhart, president of the Rochester company, which serves about 3400 telephones, began his service late in January as director of BDSA's Communications Division.

Stanley F. Damkroger, general commercial manager in the Washington-Idaho area of Pacific Telephone, is taking a leave of absence from that post to serve with the government as Assistant Administrator of BDSA.

Division directors in BDSA serve on a rotating basis without compensation from the government. The first directors of the BDSA Communications Division were from the Independent branch of the telephone industry, but the last several have been on loan from the Bell System.

As Director of the Communications Division, Mr. Barnhart will be responsible for the communications phases of the government's mobilization and defense preparedness program. He will assist in the development of plans to meet any enemy attack and consider problems related to post-attack planning and continuity of management and operations. The division also serves as liaison between industry and all branches of the government.

Mr. Barnhart has headed the Rochester company since 1934, when he succeeded his father, the late Henry A. Barnhart, who founded the company in 1896. In addition to directing operations of the telephone company, he is also President and Publisher of the News-Sentinel, the Rochester daily newspaper, which he has headed since 1919.

A member of the US Independent Telephone Association Board of Directors, Mr. Barnhart is Chairman of the U.S.I.T.A. Bell Acquisitions Committee. He has held posts in the Indiana state government from time to time, including that of Director of the state Department of Conservation, a state Cabinet position.

As Director of the BDSA division, he succeeds Albert H. Holley, division manager in Brooklyn for the New York Telephone Co.

Mr. Damkroger, as assistant administrator, will have responsibilities for the functioning of 10 Industry divisions in the Commerce Department agency, including the Communications Division. The post is the same one filled earlier by W. Elmer Pothen, of the Northwestern Bell Telephone Co., who was succeeded last July by Ralph E. Cross, now returned to his post as executive vice president of the Cross Co. of Detroit.

The new assistant administrator has served continuously with Pacific Telephone since 1928, except for a period of Navy duty during World War II. He has been general commercial manager in the company's Seattle headquarters since April, 1953, and previously was in sales and commercial assignments.

NEMA Urges Change In "Buy American Act"

THE TELEPHONE Equipment Section of the National Electrical Manufacturers Association has urged that the communications equipment manufacturing industry in the United States, "as a key industry essential to national security," be eliminated from the provisions of an executive order of last December modifying the Buy American Act.

The act was passed in 1933 as an anti-depression move, and requires federal agencies to give preference to US producers in placing orders, generally providing that a contract should be awarded to a US bidder if his price did not exceed that of foreign competitors by more than 25%. President Eisenhower, in the executive order, eased the act's effect by lowering the differential to the 6-10% range.

In a letter to Charles E. Wilson, Secretary of Defense — the department handling the bulk of contracts affecting the communications industry — and other interested government agencies, John Brown Cook, president of the Reliable Electric Co., and chairman of the NEMA Telephone Equipment Section, pointed to the order's recognition of the fact there are still certain areas neeeded where "essential national security interests" should be protected, and offered data to support the position that the communications equipment industry is in that category.

The NEMA section is composed of representatives of the Automatic Electric Co., Cook Electric Co., Kellogg Switchboard & Supply Co., Leich Electric Co., Reliable Electric, Stromberg-Carlson Co., and the Western Electric Co.

Mr. Cook pointed to the fact that the minority report of the commission headed by Clarence Randall, studying trade and tariff problems, placed communications in the category of "essential national security interests" by its statement: "Recognizing that certain industries, particularly the public service industries such as transportation, electricity and gas, and communications are basic to the entire economy in both peace and war, any sound policy should consider the necessity of insuring that their operation is not dependent upon any foreign sources of supply of equipment or maintenance which cannot be depended upon in any emergency."

The NEMA letter emphasized that "The (communications) industry as such has become the nerve center of our entire industrial effort and permits of the proper and adequate coordination of this effort during peace times and, to a more important degree, it will do so during times of national emergency. The telecommunications of the US represent the most completely integrated system in the

world operating with universally applied standards of equipment and operating practices."

While the Buy American Act relates only to government purchases, NEMA pointed out that "all installations of the government of telecommunication facilities become integral parts of the nationwide system. Because of this, anything that affects government installations would have an effect on civilian installations."

Mr. Cook's letter also brought out that the method of operation of the approximately 600 manufacturers of telephone equipment in the United States provides economies for operating companies which are reflected in lower rates for their subscribers. "A substantial infiltration of foreign equipment could gradually disrupt this smooth-working and efficient system of supply which has given this nation the best and most dependable telephone system on earth," it was said.

Senate Committee Plans Expansion of Communications Study

AN EXPANDED and intensified program of studying communications matters, with considerably more emphasis on common carrier issues than heretofore shown, is being planned by the Senate Interstate & Foreign Commerce Committee, it has been shown in a report of the Senate Rules Committee recommending that Interstate Commerce be given a $200,000 allotment for special studies during the coming year.

In his justification for the $200,000 in additional funds requested, reproduced in full in the Rules Committee report, Chairman Warren G. Magnuson, on behalf of the Interstate Commerce group, listed common carrier objectives of his committee as follows:

"The committee also believes that constant surveillance must be maintained in the public interest over common carrier communications operations, such as the telephone service. It has noted in the past two years a mounting number of complaints from broadcast licensees on the high cost of inter-connections for television stations, coupled with an inadequacy of service to cities which do not lie athwart transcontinental cable and microwave lines.

"The growing number of rural telephone systems and the general growth of Independent telephone companies has served as a counter to the monopoly of the Bell System companies, but in view of what seems to be inadequate regulation by the FCC of rates and charges for interstate and foreign communications services it is apparent that a careful review of these matters is in order.

"Still another phase of the communications problem which warrants careful study and analysis is that which has arisen by reason of the continued growth of the teletypewriter exchange (TWX) service and the private line telegraph service, both of which are managed and operated by the telephone system. The possibility of serious harm to the competitive position of the domestic telegraph industry because of the operation of these services has long been a matter of concern to this committee."

Chairman Magnuson indicated at a press conference following release of the report that about $100,000 probably will be spent by the committee on communications matters.

He released a report by the committee's special counsel, Harry M. Plotkin, on the television-radio study, regarding which comments of the FCC and the Justice Department have been asked.—THE END

Coming Conventions

Louisiana Telephone Association, Jung Hotel, New Orleans, Feb. 16 and 17.

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, March 1.

Texas Telephone Association, Plaza Hotel, San Antonio, March 14 and 15.

Nebraska Telephone Association, Cornhusker Hotel, Lincoln, March 22 and 23.

Ohio Independent Telephone Association, Deshler Hilton Hotel, Columbus, March 28, 29 and 30.

United States Independent Telephone Association Executives Conference, Belleview-Biltmore Hotel, Belleair, Fla., April 4 and 5.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, April 12 and 13.

North Dakota Telephone Association, Fargo, April 25 and 26.

Wisconsin State Telepho Association, Loraine Hotel, Madison, May 4 and 5.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 11 and 12.

The Illinois Telephone Association, Pere Marquette Hotel, Peoria, May 19 and 20.

Kansas-Missouri Telephone Association, (Joint Convention), Town House Hotel, Kansas City, Kans., May 23-24.

Pennsylvania Independent Telephone Association, Pocono Manor Inn, Pocono Manor, June 1 and 2.

California Independent Telephone Association, Ambassador Hotel, Los Angeles, June 9 and 10.

New York State Telephone Association, Scaroon Manor Hotel, Schroon Lake, June 13, 14 and 15.

Oregon-Washington Independent Telephone Association (joint convention). Olympic Hotel, Seattle, Wash., June 17 and 18.

Michigan Independent Telephone Association, Pantlind Hotel, Grand Rapids, September, 8 and 9.

Rocky Mountain Telephone Association, Utah Hotel, Salt Lake City, Utah, September 15 and 16.

United States Independent Telephone Association, National Convention, Conrad Hilton Hotel, Chicago, October 10, 11 and 12.

North Carolina Independent Telephone Association, Carolina Hotel, Pinehurst, October 17 and 18.

We doubled the load on two old iron wires with LYNCH CARRIER EQUIPMENT ...recommended by Graybar

SAYS:
FRANCIS N. WILLKOM,
GENERAL MANAGER
FARMERS TELEPHONE COMPANY
LANCASTER, WISCONSIN

"We've come a long way since the 1890's when, to become a subscriber, a person had to pay ten dollars or build a mile of line . . . and switching dues were only a penny.

"Today, though we provide modern telephone facilities for more than 2600 subscribers, we're still a small company and have to rely on our suppliers for help and information.

"This is one of the many reasons why we've been doing business with Graybar for over forty years. Not being able to tie up a lot of capital in supplies and inventory, we necessarily depend on the Graybar warehouse system. Graybar always provides exactly *what* we need — *when* we need it.

"Then again, I can't say too much about Graybar personnel. Graybar Telephone Specialists know their business and are wonderful to do business with. They keep us up-to-date on new equipment and techniques and their suggestions are often invaluable. The Lynch carrier unit we installed in February is a sample of a Graybar suggestion that really paid off. Better yet — Graybar assistance in these out-of-the-ordinary problems is freely given, there's never any feeling of obligation on our part.

"This kind of service and cooperation really mean a lot to a small independent like the Farmers Telephone Company."

You too can benefit from Graybar's services! Pole line supplies for maintenance and new construction . . . exchange and office equipment . . . linemen's tools and safety equipment — all are conveniently available from Graybar warehouses located near you. Call us for any telephone need. Like you, Graybar is proud of its independent status and the fact that it is owned and operated solely by its operating and retired employees. 501-282

Wire Chief Lawrence Esser personally installed this Lynch B-28 carrier system on an 11-mile iron wire circuit between Cassville (dial) exchange and the Glen Haven (magneto) exchange. There were no difficulties experienced in terminating units and, to date, maintenance problems have been nil. In spite of the iron wires, the system has operated so well that before the two circuits were balanced, subscribers were asking to have their calls placed on the superior carrier circuit. Present plans are to install an additional Lynch carrier on an equally overloaded 18-mile circuit between Potosi and Cassville.

Out in the field, Manager Willkom and Wire Chief Esser check progress on the installation of a new circuit. For new work like this or everyday maintenance, both Willkom and Esser recognize the importance of quality tools and supplies . . . and the respect line crews have for the well-known products distributed nationally by Graybar.

This reproduction of an old photograph taken in the 1890's shows the wife of the founder of Farmers Telephone at the original handmade switchboard. The company, today, employs 24 persons and efficiently serves the southwest portion of Grant County. Records show that Farmers Telephone has been a customer of Graybar and its parent company, Western Electric, for well over 40 years.

Here Graybar Telephone Specialty Salesman Sabo and Manager Willkom discuss a list of telephone supplies – ordered from Graybar. Like many independents, Farmers Telephone looks to its suppliers for technical help and information. In fact, it was during a similar conversation over a cup of coffee that disclosed the problem of an overloaded circuit and led to Sabo's suggestion of a trial of the Lynch equipment.

Call Graybar first for...

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N.Y.

GraybaR 1 QUALITY *Everything Electrical*

IN OVER 110 PRINCIPAL CITIES

"Enthusiasm"

By ERNEST W. FAIR

"HOW CAN I get more work out of the people on my payroll?"

That's a question we have been hearing from company executives in every corner of the country for a long time now. The strained employe-employer relations of the past have left scars on even the smallest business in the lack of realization on the part of employes that the more they do on the job and the better they do it the more sure they can be of retaining the so-called "labors gains."

It's a dollar and cents proposition to any company executive as he finds the competitive market for good men becoming stiffer and stiffer. Our present day operations call for cutting corners . . . shaving expenses . . . and getting more for the bulk expenditure of our dollars . . . the labor we employ to keep our business operating

So the question of what we can do to get more work from our present staff is of importance. There are many steps that can be taken, as we shall present, steps that have proven successful in actual practice.

The creation of greater job enthusiasm is of prime importance for it is the answer to the question in our first paragraph. The enthusiasm for their work on the part of the people on our staff will be the greatest factor in securing more return from their efforts.

Financial incentives can always be placed before an employe but close margins of operation today force many executives to look for other means. There is also some union antipathy toward such financial incentives which pit one employe against the others in contests for superior work ouput.

During the present period it pays to steer clear of such financial incentives for the reasons mentioned above.

There are a great many non-financial incentives which can be used to arouse worker enthusiasm for the job. The most important of these are *interest motivation, social motivation* and *motivation by promotion and transfer.*

In the first mentioned of the three we have the greatest opportunity for improvement. All of us do best the things in which we have greatest interest.

That interest means pride in our work and that pride comes from the worker being fully aware of the importance of his job, how well he is doing at that job, and how important telephone service he is making possible is to the life of the civilization in which he lives.

The provision of good tools and equipment helps to contribute to that pride. No one can work with enthusiasm for a firm that insists on continued use of obsolete or worn-out tools and equipment. The worker must have assurance of the company's interest in him before he can expend his own interest toward helping the company. This same applies to many other points within any telephone company organization, factors which will be evident by inspection with this thought in mind at the time.

Monotony & Fatigue

MONOTONY and fatigue are great contributors to the lack of enthusiasm of employes for their work. Fatigue always means a waning of interest. The whole physical structure of the body is affected when a person becomes tired and bored with what he or she is doing.

Monotony is a source of psychological fatigue. Studies have shown that the adjustment to monotony seems to be closely related to temperament, in that some people can take monotony better than others. Resistance to monotony is also definitely related to levels of intelligence.

Rest periods during the course of the day's work help to relieve these conditions. The employer who insists on work continuing without such rest periods seldom gains anything in total work ouput whether in the office, shop or on the line; most often the volume of work done is generally a good deal less than if employes had been permitted these rest periods.

A change in the form of activity of a worker during the periods of work helps to lessen monotony and provide greater job enthusiasm in almost any job. Wherever this can be done without disrupting the work routine it will generally pay dividends.

Assignment of work as a self-contained task rather than as an indefinite and indeterminable activity has also been recommended as another step in both avoiding monotony and in building job enthusiasm among all levels of intelligence of employes.

The work conditions of the em-

ploye with regard to hours, schedules and planning of work can also be shifted and varied at regular intervals as a further step in this direction.

The aforementioned factor of social adjustment to the job is worthy of great attention. Security is just as dependent upon one's adjustment to fellow workers and to supervisors as it is to the opportunity to develop individual skills on the job . . . security and job interest are in many cases synonomous.

Any worker to have interest in his job must have self respect, appreciation and recognition . . . they are the things that contribute to his morale and to his job enthusiasm. When they are not present his work and his interest slow down without fail.

Another source of arousing job enthusiasm is the institution of a suggestion scheme within the organization on the theory that the employe is entitled to express his recommendations for improved methods. This idea has definitely proven to be good for arousing job enthusiasm where fairly administered and set up in good faith and given complete recognition when good ideas are forthcoming.

When such a plan is put into use employe suggestions should be acted upon within a reasonable length of time, prompt rewards should be given, good judges should be chosen and reasons always given for rejection of ideas.

Promotion & Transfer

OUR LAST incentive, promotion and transfer, calls for a standing policy of selection of men from the ranks for all promotions that occur within the organization. We can hardly blame a complete lack of job enthusiasm upon any employe who knows that every opening on better jobs than he or she has will be filled from outside of the organization.

A plan of systematic promotion is needed in every telephone company organization, large or small, so that every employe may know just what his or her opportunities are and so that they may know the enthusiasm they expend toward doing a better job will bring them toward a definite goal.

This plan will mean increased confidence in the management and resulting good morale, increased work output through maximum employe skill and effort and the company management may be assured of available supervisors and junior executives at all times.

Given sufficient incentive through interest in one's work, financial rewards, social prestige and opportunities for advancement the expenditure of effort any company employe will make will provide the answer to how we can create more job enthusiasm and secure more work from the employes on our staff.

There's always the one individual to whom no plan will appeal and whose sole interest is in doing just enough work to hold onto his job. Nothing can have any effect on this individual as long as he remains protected by any type of security which is not connected with productivity or job enthusiasm.

With this individual our program should call for a most careful screening at the start to prevent his ever having been put on the payroll. Much laxity was evident in the years past on this matter of hiring . . . most of us were forced to take anybody we could get our hands on. The reverse is true today and the executive who seeks to secure job enthusiasm from employes as a whole can well set up effective screening methods to make the hiring of this type of individual a thing of the past.—***Ernest W. Fair***

"A Story to Tell"

"I WANT TO say a final word of tribute to you, personally, as Independent telephone men and women. You are by far the most essential part of this success story. You, and thousands of men and women like you, are the real liberals and real humanitarians in the march of progress which has characterized the American way of life. Let us never lose sight of that fact. Let us not undersell ourselves as individuals. Let us not be content just to plug our service but not our industry, else we may end up by having a lot of people think more of the service than of the company which renders it. Call it public relations or what you will, these things ought to be identified in the public mind. We must tell our story better. The story of the Independent telephone industry is just as important as all the other things I have mentioned. And what a wonderful story we have to tell! It is all part of the great success story of American business in general." — WARREN B. CLAY, Hutchinson, Minn., at the 1954 U.S.I.T.A. Convention.

SELF RESPECT, appreciation and recognition contribute to the employe's morale and to his job enthusiasm.

By J. G. DALTON*

HERE'S HOW Southern Bell acquaints employes, working in underground plant, with the fundamental facts behind manhole atmosphere testing and ventilation.

ONE OF THE dangers encountered by telephone employes in their daily work is gas hazards in underground structures. Despite the fact that employes working in manholes have been overcome by toxic gases and severely burned by combustible gases, there still remains the big problem of convincing them that these hazards actually exist. It has, therefore, been necessary to develop a training course to acquaint employes, working in underground plant, with the fundamental facts behind manhole atmosphere testing and ventilation.

It has also been necessary to develop demonstration equipment that will give them a graphic picture of the over-all situation in a form which would appeal to them and could be readily understood in terms of actual job conditions.

Unless this training is effective and impresses the employes with the necessity for making all of the prescribed tests and taking the recommended precautions, an increase in manhole accidents can be expected due to the tremendous increase in the distribution of fuel gases in this country and the higher pressures used in an attempt to serve an ever increasing number of subscribers. With the rapid expansion of both the gas and telephone underground systems, more of these combustible and toxic materials are finding their way through the ground and collecting in underground plant.

Three Major Classes

THE GASES likely to be encountered in manhole work can be divided into three classes: toxic, explosive and suffocating. The Table on *Page* 55 shows the various gases, the dangerous constituents, their effect on the human body, and the equipment generally used to detect the presence of these gases.

Carbon monoxide is singled out for special consideration as it is the most poisonous gas and the most treacherous. When the air in a manhole contains as little as 0.7 per cent carbon monoxide gas by volume (7 parts CO to 10,000 parts of air) it is unsafe to enter.

**Mr. Dalton is safety method's supervisor, Southern Bell T. & T. Co., Atlanta, Ga.*

It gives no warning of its presence, being tasteless, odorless, colorless and causing no irritation to the nose or throat or any other part of the respiratory system.

It is invariably found in manufactured gas, mixtures of manufactured and natural gas and in the exhaust gases from automobiles and other internal combustion engines. Its effect on the human system is cumulative and therefore, long exposure to even very small quantities is dangerous.

Resuscitation methods are usually successful with victims of carbon monoxide poisoning even in the advanced stages, if they have not been exposed too long or to too great a concentration of gas. Carbon monoxide is detected by means of the carbon monoxide detector. This detector is a small glass ampoule covered with absorbent cotton. The ampoule contains a solution of palladium chloride which darkens on exposure to carbon monoxide.

Hydrogen sulphide is one of the most toxic of the more commonly used industrial gases, being harmful in concentrations as low as .005 per cent by volume (50 parts of H_2S in a million parts of air), and possibly fatal in concentrations above .07 per cent unless the exposure is limited to a very few minutes.

The gas has a distinct, disagreeable odor resembling that of rotten eggs but this does not adequately serve as a warning of danger since two to 15 minutes exposure to concentrations of hydrogen sulphide as low as .01 per cent (100 parts in a million) may produce impairment or temporary loss of the sense of smell. It is found near mines or refineries, sewers, filled in or swampy areas. The presence of this gas is also detected by the use of the carbon monoxide ampoule previously described.

Explosive gases are those which when combined with air in certain proportions and exposed to an open flame or a hot spark will burn or explode, depending on the proportions of air and gas in the mixture. These include natural gas, hydrogen, manufactured gas which contains carbon monoxide and hydrogen, mixtures of manufactured and natural gas, propane, butane and fumes of various petroleum derivatives.

Some of these gases are toxic as well as explosive and some have an odor. These gases are detected by the use of a suction gas indicator or a hot wire indicator. The hot wire indicator operates on the principle of a Wheatstone Bridge. When a mixture of air and combustible gas is drawn through a filament chamber, the hot filament ignites the gas which raises the temperature of the filament and thereby increases its electrical resistance. The change in the resistance unbalances the bridge. The amount of the unbalance is a measure of the exposibility of the gas. The suction gas indicator is an open flame type instrument. The indicator burns lighter fluid and is equipped with a metal spark ignitor for lighting the wick. An aspirator and a length of sampling hose are provided by means of which atmosphere can be drawn from the underground structure through the combustion chamber. The presence of combustible gases, oxygen deficiency, corbon dioxide, etc., is determined by the action of the flame in the lamp.

In order to illustrate the theory and characteristics of gases and the use of testing equipment, a model manhole was constructed approximately 1/4 scale or 1/64 the volume of a regular manhole.

It consists essentially of a plywood box, the front of which is made of transparent 3/8-inch plexiglass through which the explosions may be observed. The top of the box is held in place by rubber bands against a rubber cushion. When an explosion takes place this top will rise and release the force of the explosion, thereby acting as a safety valve.

Inside of the box there are small simulated telephone cables placed against the rear wall in conformance with Bell System practices. Gas is admitted to the model manhole through a hole at one end of the box, at a location where the conduit normally enters the manhole. This gas is passed through an instrument to regulate the rate of flow and bubbled

Please Turn To Page 85

GASES FOUND IN MANHOLES AND METHODS OF DETECTION

Type	*Dangerous Constituents*	*Effect*	*How Detected*
Household Gases			
Manufactured	Carbon Monoxide, Hydrogen	Toxic and Explosive	Carbon Monoxide Detector
Mixture of Manufactured and Natural Gas	Carbon Monoxide, Hydrogen, Natural Gas	Toxic and Explosive	Carbon Monoxide Detector
Natural and Petroleum Gas	Methan, Ethane, Ethylene, Propane, Butane and Hexane	Suffocating and Explosive	Suction Gas Indicator or Hot Wire Indicator
Soil Gases			
Hydrogen Sulphide	Hydrogen Sulphide	Toxic	Carbon Monoxide Detector
Carbon Dioxide	Carbon Dioxide	Suffocating	Suction Gas Indicator
Industrial Gases			
Sulphur Dioxide	Sulphur Dioxide	Irritating	Smell
Ammonia	Ammonia	Irritating	Smell
Butadiene	Butadiene	Explosive	Suction Gas Indicator or Hot Wire Indicator
Liquid Fuels			
Gasoline	Fumes	Toxic and Explosive	Suction Gas Indicator or Hot Wire Indicator
Benzol	Fumes	Toxic and Explosive	Suction Gas Indicator or Hot Wire Indicator
Fuel Oils	Fumes	Irritating and Explosive	Suction Gas Indicator or Hot Wire Indicator
Oxygen Deficiency			
Oxygen Deficiency	Lack of Oxygen	Suffocating	Suction Gas Indicator

THE LEICH 100 TELEPHONE!

WALL OR DESK MODEL

With the Leich 100 you are never short a wall or desk telephone. For the one instrument serves as either wall or desk model. You don't change, add or buy a thing. Even on dial models, it's necessary only to rotate the dial so the numbers are right side up if the telephone is to be installed as a wall model. This exclusive Leich feature will save you time and trouble.

LEICH

This is more than just another *good* telephone — this is the *finest* telephone instrument you can install.

You won't have to ask your subscribers how they like this new Leich 100. They'll tell you of their own free will — that never before have they heard this well over the telephone.

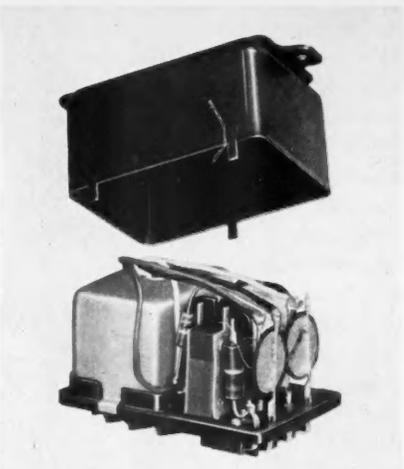
The Leich 100 telephone, equipped with the T1 transmitter, the U1 receiver and the new Leich network brings you the highest degree of transmission efficiency available. The longer your lines, the more readily will you notice the improvement in *both* transmission and reception.

Write today for our bulletin which gives complete information.

new transmitter and receiver units

Leich 100 telephones have the new Western Electric T1 transmitter and the new Western U1 receiver. The T1 transmitter gives you the highest transmission output available and the U1 receiver offers more efficient reception with a wider frequency response. The new handset unit is shorter and considerably lighter.

ion and reception are improved so much—
our subscribers will hardly believe it!



the new Leich 100 network

This new Leich 100 network gives the increased side-tone control which is so necessary to maintain the gains produced by the new transmitter and receiver. It permits maximum transmission on long loops and reduces it on short ones. The Leich 100 network is made under license from Western Electric and its circuit is identical to that used in the Western type 500 telephone.

CH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907
LEICH SALES CORPORATION 427 W. RANDOLPH STREET CHICAGO 6, ILLINOIS
PACIFIC COAST: 2611 SAWTELLE BLVD., LOS ANGELES 64, CALIF. SOUTHWEST: 1227 SLOCUM ST., DALLAS 7, TEXAS

GENERAL SYSTEM

Planning and Construction of

Local Line Plant In England

By R. G. TUNGATE

IN PART III of his discussion of England's local line plant, Mr. Tungate discusses: Types of poles, crossarms, galvanized iron stay wire; spindles and insulators; line wire; aerial cable; and terminal blocks.

Poles

MOST of the poles in use are of Scots Pine or Red Fir, and are stocked in four classes, Extra Light, Light, Medium and Stout. In general, Extra Light poles are used for farmers lines and other routes involving the provision of only one or two pairs, Light poles are used on routes carrying up to 14 open wires, and those in the Medium class for distribution poles, aerial cable routes and for replacements on routes carrying up to 28 open wires.

FIGURE 14: —Ring Type DP.

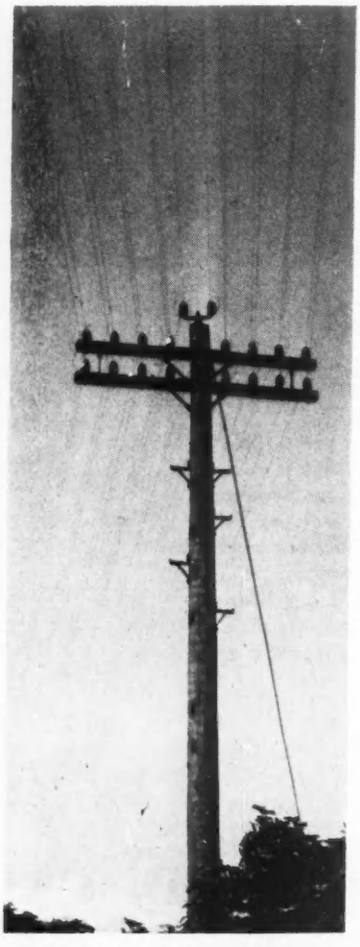


FIGURE 13: — 8-Way Crossarms.

Very little use is made of Stout poles for new construction, though in the past an extensive network of heavy open wire trunk routes existed which employed stout poles in either single, A or H formation. The preservative treatment used for wooden poles is pressure creosoting, approximately 4 lb. per cu. ft. of creosote being retained in the pole.

In addition to wooden poles, limited use has been made of sectional sheet steel and pre-stressed concrete poles. Joint construction with Electricity Supply Boards is used when possible.

Poles steps are fitted on most poles, the bottom step being approximately 15 ft. from the ground.

Arms

THE MOST generally used arm accommodates four spindles, though 6 and 8-way arms are also used. The winding nature of treelined roads has done much to limit the use of 8-way arms in the past. British Oak is used to a large extent as the material for arms, the normal cross section for local lines being 2½″ by 3″, drilled to take spindles, arm bolts, braces, and combiners. *Figure* 13 shows a pole equipped with 8-way arms, and *Figures* 14 and 15 show a ring type DP for serving subscribers without the use of intermediate poles.

Staying

GALVANIZED iron stay wire with breaking weights of 6,000 and 10,000 lb. is in general use, and most stay rods incorporate a tightener. Wooden stay blocks are invariably used, and the stay wire is normally lapped twice around the pole and made-off by means of a plier-type serving tool. Wooden stay guards are fitted when required.

Spindles and Insulators

GALVANIZED mild steel spindles are in general use; straight spindles are fitted at "through" wire

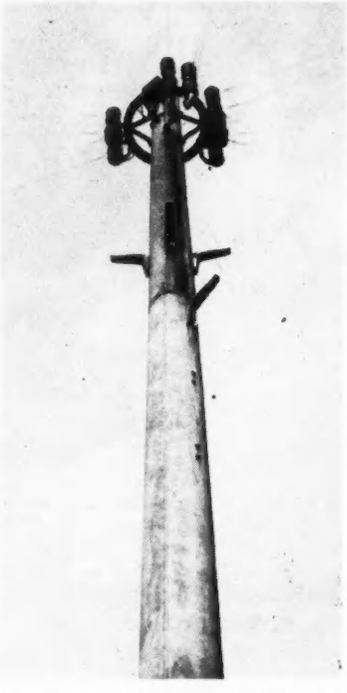


FIGURE 15: — Close-up of Ring-Type DP.

positions, but use is made of "J" spindles at terminal points to avoid the application of a turning moment to the arms. Insulators in general use in Britain are made of white porcelain, brown glazed earthenware or black composition. A rubber washer is placed on the upper shoulder of every spindle before the insulator is screwed on to avoid damage to the threads and to prevent unscrewing due to vibration.

A special type of insulator is used at terminations; this has a removable top cap which covers a recess inside which the joint between the line wire and cross-connecting cable or lead can be made. Various types of brackets are employed for attaching insulators to buildings.

Wiring: Open Wire

THE most generally used material for line wire is cadmium copper. This has almost the same strength as bronze, and a resistance only slightly higher than copper. Conductor sizes are expressed by weight per mile, the most common sizes for local lines being 40 lb. (18 A. W. G.) and 70 lb. (16 A. W. G.) per mile. The average span length is 60-65 yards though 80 or 100 yard spans are possible.

Twisted sleeve joints are used, the two wires being placed side by side in a flattened cadmium copper tube which is given a number of twists by means of suitable tools. Tapes and binders are used for binding-in wires at insulators, the tape being wound round the wire to prevent chafing where it touches the insulator, and the binder being taken round the insulator and wound over the tape. Paper braided jute or plastic insulated wires are used when there is a danger of contact with power wires.

The minimum height above ground level to which wires are erected is 12 feet (10 feet for light construction) otherwise the following clearances are given:—

Crossing	Minimum Clearance ft
Over trolley wires	28
Streets in towns	22
Country roads	20
Field gates	18

Drop Wire

INSULATED twin drop wire is used to some extent, having 31 lb. (17 A. W. G.) rubber-insulated conductors. Plastic is now replacing braided textile as the sheath material. Wedge type drop wire clamps are used for supporting the cable, the wire loop of the clamp being re-inforced by a metal ring to give added strength at the point of attachment, which is liable to be subjected to wear.

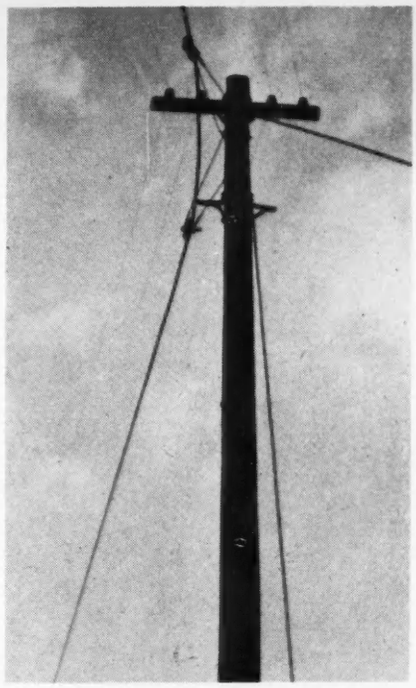


FIGURE 16: — Stainless Steel Sheathed Aerial Cable Route.

Aerial Cable

LEAD COVERED or polythene sheathed aerial cable is used to a fairly large extent in rural areas, supported on a steel suspension strand varying from four strands of No. 14 S. W. G. (12 A. W. G.) to seven strands of No. 8 S. W. G. (6 A. W. G.) with breaking weights of between 3,250 and 22,000 lb.

Clamps are used for gripping and terminating the strand and cables are lashed to the strand by means of lashing machines. Heavily galvanized, specially annealed, steel laching wire is normally employed, but steel or aluminium lashing wire with a plastic coating has been used.

Self-supporting stainless steel sheathed cable has been in use for some years and trials are being made self-supporting plastic cables. *Figure* 16 shows a stainless steel sheathed aerial cable route.

Terminal Blocks

A 15-PAIR TERMINAL block is in general use for the termination of cables on poles or buildings. The termination of the cable is carried out on site or in advance of the fitting of the block, the back of the block being filled with wax after the wires are terminated. The terminal posts are arranged radially to enable all leads to be of equal length to facilitate their easy transference, if necessary.

Conclusion and Acknowledgement

THE type of plant used in Great Britain is greatly influenced by considerations of safety and appearance, and account has to be taken of the prevailing damp climatic conditions which, particularly in industrial areas, are very liable to give rise to low insulation troubles. Considerable use is made of mechanical aids such as crane vehicles, cable drum and pole trailers, kiosk (booth) trailers, tractors, moledrainers, air compressors and road breakers, trench excavators, small bulldozers, and petrol-engine driven winches, pumps, air-desiccators, and lighting sets. Limited use is made of power driven earth augers, their use being restricted by the fact that a great proportion of poles is erected in built-up areas under paved surfaces containing other services.

Before closing, reference should perhaps be made to the type of outdoor telephone kiosk or booth which is very much in evidence in Britain. Its design harmonizes with either city or country surroundings and the frame work is normally painted red. The name "Telephone" is displayed on all four sides and time-switch controlled lighting is installed.

Acknowledgement is gratefully made to the Engineer-in-Chief of the General Post Office for permission to make use of the information contained in these articles. —The End

EDITOR'S NOTE

Section III concludes Mr. Tungate's interesting and valuable discussion of the methods of planning and constructing local line plant in England. We want to thank Mr. Tungate for preparing the article for exclusive publication in "TELEPHONE ENGINEER & MANAGEMENT."

If you liked this series and would like more articles on telephone systems in other countries — let us know. We'll try to get them for you.

Designing Modern Communication Lines

By J. N. PETRIE*

PART VI of Mr. Petrie's article discusses — (1) equipment design, and, (2) field use of the Type 45A and 45C open-wire carrier. Part V of this article appeared in the January issue.

IN VIEW of the fact that "run-around" crosstalk at repeater stations is a major problem in the operation of high-frequency multi-channel carrier systems, much attention has been paid in recent years to the design of carrier systems that are not limited by these factors and thus permit achieving acceptable crosstalk performance at considerably reduced cost for mitigating and reducing procedures.

This objective has been accomplished in the Lenkurt Type 45C systems as well as in the W. E. Type OB, both of which utilize "frequency-frogging" repeaters. Briefly, this technique takes advantage of a procedure that not only amplifies the two groups of channels at each repeater point, but also inter-changes their frequency allocation so that the inputs to any one repeater (which will be at a low level) will always be in the same frequency band, while the outputs from any one repeater (which will be at a higher level) will be in the other frequency band. Under this type of operation the run-around crosstalk problem is mitigated approximately by the amount of the difference in level that would otherwise exist in the two directions of transmission and that would frequently be of the order of magnitude of 50 to 60 db under bad weather conditions.

The frequency frogging type of carrier system also has other advantages that recommend it for specific applications under difficult line conditions. This advantage largely accrues from the fact that by frequency frogging the line facilities are made to equalize themselves from one repeater section to the next, thus, there is no artificial line equalization necessary, which in the ultimate needs to be made up by inserting additional gain at repeater points. Also this technique permits somewhat longer repeater spacings under average conditions.

Among the various advantages that a "frequency-frogging" type of system provides, the most important is that it makes it possible to superimpose four additional channels on facilities originally designed for carrier frequency operation only up to 35 kc and already carrying systems up to this frequency limit. Specifically, the crosstalk advantages that can be gained in this manner, together with further noise and crosstalk control that is obtainable from the use of compandors, makes it practical to operate carrier frequencies up to approximately 80 kc on line facilities that originally were intended and thought to be suitable only for frequencies up to approximately 35 kc.

Field Surveys

EVEN AFTER careful analysis and due consideration have been given to all of the factors outlined in the foregoing sections there still will be situations in which all of the precautions will not have produced facilities having the desired characteristics. This usually will result from the fact that minor deviations or errors were undetected or that actual trouble conditions may have been overlooked. But there also are many situations in which due to a favorable combination of circumstances the desired performance standards can be achieved without resorting to all of the various mitigative measures referred to earlier.

In view of the foregoing, it generally is advisable before the installation of any carrier system is contemplated to actually make a field survey of the noise, crosstalk, and attenuation conditions pertaining to the facilities on which the carrier system is to be operated. Especially for the shorter systems it is expected that many situations will be encountered where entirely adequate performance standards can be achieved without resorting to elaborate and expensive rearrangements and installation of mitigative measures. In determining whether or not a particular transmission medium is suitable for the transmission of additional high-frequency channels, it is recommended that suitable transmission measurements be made, as well as tests of the crosstalk

*Mr. Petrie is Manager, Carrier and Radio sales, Automatic Electric Sales Corporation.

performance at the frequencies contemplated.

In analyzing a noise situation of any particular proposed new transmission facility, special attention must be given to the possibility of interference from paralleling power line carrier systems and nearby radio station exposures.

Field of Use of Type 45A & 45C Open Wire Carrier Systems

THE TYPE 45A carrier system belongs to the family of carrier systems sometimes referred to by the general designation "Type J." The type 45C carrier system belongs to the class of equipment which is frequently referred to as "Type O" equipment.

These two systems were designed to meet two distinct requirements in wire line applications. They differ in 1) line frequency allocations employed, and 2) in the maximum distances for which each is adapted. The two open-wire allocation plans are shown graphically in *Figure* 14. Both allocations provide for 12 two-way channels in the frequency range between 40 and 160 kc, which is the range of interest in this discussion.

They differ primarily in the number of channels assigned to continuous blocks of frequencies in each direction of transmission. The 45A allocation assigns the block of frequencies between 40 and 88kc to West-East transmission of all 12 channels, with East-West transmission taking place in the 99 to 150 kc region. This system coordinates with Lenkurt Type "42C" and W. E. Type "J2" carrier systems.

The 45C system contemplates three groups of channels in the 40 to 160 kc region, with opposite directions of transmission occurring in adjacent frequency bands for each group. The 45C coordinates with Western Electric Type "O".

By providing two different frequency allocations in the 45 class equipment, it is feasible to supply a single type of economical equipment tailored to the varying requirements of the industry as a whole. Since the two allocations are not compatible, they usually cannot be used on the same line, therefore choice of the proper system should be given careful consideration before committing the line to either one or the other frequency allocation.

The 45A system is essentially a "long-haul" system, but sufficiently economical to make it attractive for many "short-haul" applications, especially on pole lines that also must be used by other "J" type carrier systems. It also lends itself readily to the "dropping" and "inserting" of channels (in blocks of four) at intermediate points without the necessity of demodulating all channels to voice frequencies. This latter feature greatly enhances its versatility and usefulness.

The 45C system is essentially a "short-haul" system with many features to make it especially attractive for use under less than ideal line conditions; where relatively small groups of circuits are required initially; or where "frequency-frogging" is a distinct necessity.

Lines Transposed For 150 KC

A NUMBER of the major open-wire lines have already been transposed for 150 kc operation, particularly the major backbone routes over which long-haul "Type J" carrier is operated. The 45A system finds its widest application as a more economical carrier system which can be assigned to lines of this nature, and thus caters to the requirements for the shorter circuit groups.

The usual 150 kc transposition schemes applied to lines carrying "42C" or "J" systems will permit successful operation of several "45A" systems without compandors, therefore the optional compandors may generally be omitted on 45A systems assigned to 150 kc transposed wires on such lines.

Staggered frequency allocations available with "42C," "J" and "45A" systems permit additional crosstalk advantages between systems on the same lead. The NA, NB, SA and SB allocations of the 45A system are designed to coordinate with the earlier systems having similar frequency allocations.

Lines Transposed For 30 KC

The increased crosstalk coupling permissible with compandor operation now permits carrier frequencies to be extended beyond the limits for which the transposition schemes were originally designed. Studies of existing 30 kc transposition schemes indicate that performance on typical lines is fairly consistent from both a crosstalk and attenuation standpoint in the region between 40 and 80 kc. Line characteristics in this frequency range are usually such that several paralleling carrier systems may be operated successfully, provided compandors are used.

At least one pair of wires can usually be found on 30 kc transposed lines that will also give satisfactory transmission performance up to 150 kc, i.e., pronounced absorption peaks do not exist. Frequently two pairs on opposite sides of the line may be found that will permit operation of two 45A systems with compandors. Suitability of any line for application of multiple higher frequency carrier systems should generally be determined by carrier frequency attenuation and crosstalk coupling measurements.

As mentioned above, the 40 to 80 kc region will usually be found satisfactory for operation of systems with compandors on most wires of a 30 kc transposed line. For purposes of securing maximum numbers of channels with the physical circuits using this transposition scheme, Type 45C-B systems will usually yield more channels than can be obtained from 45A systems without retransposing; they may be provided economically in most cases by spreading four-channel 45C-B systems over all pairs found to be suitable from a crosstalk standpoint.

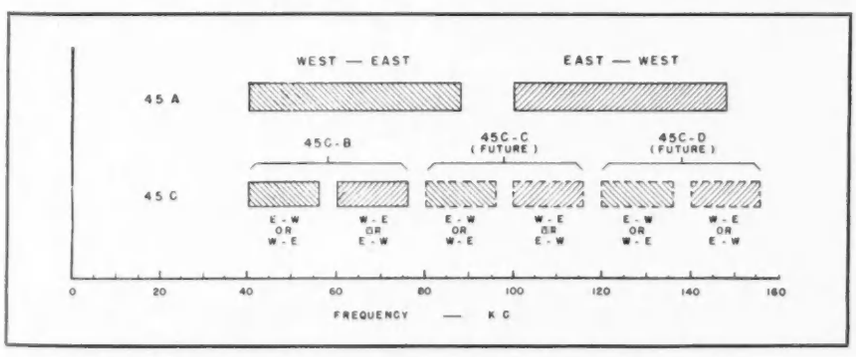


FIGURE 14: — Frequency allocations 45A and 45C carrier systems.

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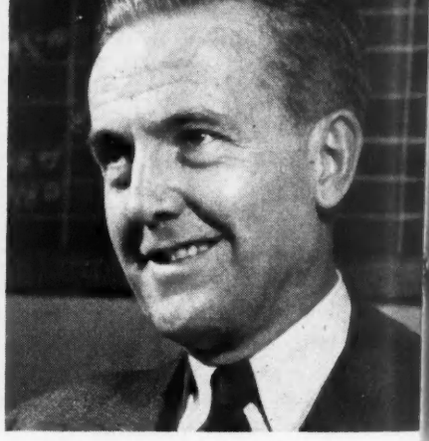

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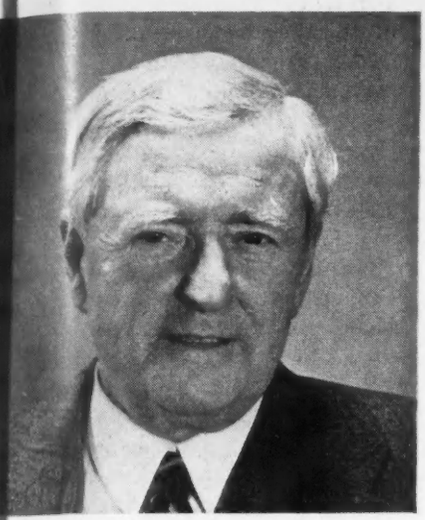

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Fact #2: Strowger Automatic is Unequalled for Dependability. Now and then an old Strowger Automatic exchange is replaced with more modern Strowger Automatic equipment containing the latest circuits. But no Strowger Automatic exchange has ever worn out. Experience proves it!

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On some lines traffic requirements for the near future may be met by application of Type 45A 12-channel systems without immediate line work. This system offers the advantage of simplified equipment arrangements resulting in a lower per-channel cost than Type 45C systems to provide the same number of channels. This saving usually should be evident on continuous circuit groups comprising 9 channels or more.

Some line treatment on each carrier pair, such as entrance cable matching, line filters, etc., will be required in either case, but with 45A only one pair will be needed for each 12 channels. Cost of treating one pair will be about the same for either Type 45A or 45C systems. If the line may ultimately be retransposed for 150 kc systems, using compandors, overall long-range cost of developing the route on the Type 45A 12-channel block allocation plan will probably be lower than that of the Type 45C allocation.

With either allocation, absorption peaks above 80 kc on a 30 kc transposed line may necessitate dropping one or more channels on some pairs. This is accomplished when necessary simply by omission of the plug-in channel unit on any of the Type 45 systems. Individual channel regulation, however, permits operation of either 45A or 45C systems over lines with much more irregular attenuation characteristics than would be possible with systems providing only broad band slope equalization. This subject is covered in more detail in the individual system bulletins.

Retransposing of Line Wires

TO DEVELOP an open-wire line to its full capabilities with either compandored or non-compandored high-frequency carrier systems, it will ultimately be necessary to employ an accepted 150 kc transposition scheme. Once a line has been transposed for 150 kc carrier operation it can then be used for either the 45A or 45C systems with the possibility of handling approximately 15 low-cost carrier circuits over each pair. This assumes pole pairs have been omitted in the retransposing process.

Carrier systems of either allocation referred to above will ultimately require 150 kc transpositions to obtain full utilization of a line. Use of compandors on a carrier system, however, permits substantial relaxation of crosstalk coupling requirements at all frequencies. Less expensive transposition schemes suitable for this purpose that take advantage of these relaxed requirements are already available. These schemes (Bell System O-1 transposition system and the AE-150 System) are equally effective on lines developed for either 45A or 45C compandored systems.

Use of Compandors

USE OF compandors that have been referred to earlier, will permit a substantial increase in line crosstalk coupling between systems operating in the same frequency range. This is accomplished in the compandor by a reduction of the dynamic range of energy in each conversation as delivered to the carrier channel. The result is a proportionate reduction in the dynamic range of the entire system as applied to the line.

Both Type 45A and 45C carrier systems are arranged for operation with compandors. Compandors are optional on Type 45A systems and are provided on a channel rather than on a system basis so that it will be necessary to install them only for the channels on which they are required. It is desirable to omit compandors on both 45A and 45C systems at the junction of two channels permanently connected in tandem.

Operation of the frequency-frogging repeaters of Type 45C systems is predicated upon the use of compandors. Common equipment is also designed to take advantage of the economies available from compandor operation. As a result compandors will be required in practically all applications of Type 45C systems and should always be included.

Equipment Arrangements

THE USE OF a solid block of frequencies for 12 channels in one direction of transmission results in some simplification of the repeater and common terminal equipment of the 45A system over that required for the 4-channel block scheme of the 45C for the same number of channels. This advantage is offset to some extent by the greater flexibility in repeater and channel dropping arrangements and by simplification of the "singing" and "run-around" crosstalk problems at 45C frequency-frogging repeaters.

Only one amplifier and one set of directional filters are required in each direction of transmission at a 45A repeater, regardless of the number of channels equipped. At terminals, a single carrier frequency supply and a single system regulator and alarm circuit are common to all 12 channels. For medium and heavy traffic routes where 12-channel blocks are practicable, systems using the 45A allocation should prove most economical from an equipment standpoint.

Type 45A terminals may be equipped with any number of channels desired from 1 to 12. Both the 45A and 45C systems are suited to applications where it is desirable to drop groups of 4 channels, or less, at various points along the line, but the common equipment associated with one 4-channel 45C system will be less expensive than that required with the 45A. The Type 45C system will be subject to lower values of midband attenuation along the line than the 45A and, coupled with frequency-frogging repeaters that may be located in accordance with the lower attenuation rather than having the repeater assignment dictated by the 150 kc attenuation will also tend towards economies in certain instances.

THE 12-CHANNEL, 48-kc wide base group has achieved wide acceptance as a fundamental design of multi-channel carrier systems in the United States and has also been adopted as an international standard in other parts of the world. Systems, such as the 45A open-wire and 45B cable carrier, that use a continuous 12-channel group, may be interconnected by means of a simple intersystem connector incorporating group modulation methods.

Such connectors present many interesting possibilities in the way of interconnecting "backbone" and tributary routes without accepting excessive channel degradation that may otherwise be experienced as a result of too many back-to-back terminal connections. It is expected that intersystem connectors of this type will find extensive application at tributary offices, junctions of main and secondary open wire routes, open wire cable junctions, and at junctions of wire and radio facilities. The 45C systems can not be interconnected

with 45A or 45B systems on this basis. They can, however, be interconnected on the basis of 4-channel groups with the intermediate frequency "pre group bypass."

Carrier Layouts With 45 Type Systems

FIGURE 15 shows a typical carrier layout of a small toll network built around one toll center, illustrating use of Type 45 carrier systems to derive additional circuits from the existing open wire and cable plant. Maintenance and test equipment costs are held to a minimum by using one class of equipment with interchangeable channel units and compandors.

The wires from the toll center to Tributary Office No. 3 leave the toll center on the same pole lead with the "connecting company" lines. This is a 150 kc transposed line to which 42C and J systems are already assigned. A 45A system is assigned to this line in the proper allocation to coordinate with the existing 150 kc systems.

The open- wire line from the toll center to Tributary Office No. 2 passes through Tributary Office No. 1. Systems in the 45C-B allocation provide additional circuits in 4-channel blocks between each of these offices. Four 45CB channels are dropped off in each direction at Tributary Office No. 1. An additional 45C-B system is used to provide a group of four circuits between the toll center and the manual office at Tributary Office No. 2.

A cable is in place between the toll center and Tributary Office No. 4, with a 24-channel 45B system assigned to it. Twelve of these channels are dropped as terminal circuits at Tributary No. 4 and the remaining twelve are routed on to Tributary Office No. 5, through a 45A-45B system connector. The 45A system assigned to this line is operating over a 30 kc transposed pair that was found satisfactory from an attenuation standpoint. Since this is the only 150 kc system assigned to the line, crosstalk is not a problem.

Although the toll network assumed for the purpose of this illustration is strictly a hypothetical one, it provides a fair example of typical usage of the 45 class of carrier systems. It can be seen that each has its specific field of application. In this case the 45A proved most desirable when used on 150 kc transposed lines with existing high-frequency systems, and on a medium length, light traffic route where 12 channels are able to provide for growth over a substantial period. The 45B is placed on existing cable pairs and the 45C is used on the line where "drop-channel" applications are required and where plans for future growth indicate that additional channels may be best provided by addition of a number of 4-channel systems operating in the 40 to 76 kc region, thus avoiding retransposing.

To summarize, use of the 45A 12-channel block allocation plan offers the following advantages:

(1) Coordination with other types of 12-channel systems.
(2) Economical repeater and common terminal equipment.
(3) Inexpensive interconnection arrangements with other carrier systems.

The 45C 4-channel block allocation has the following features to recommend it:

(1) Separate terminals permit

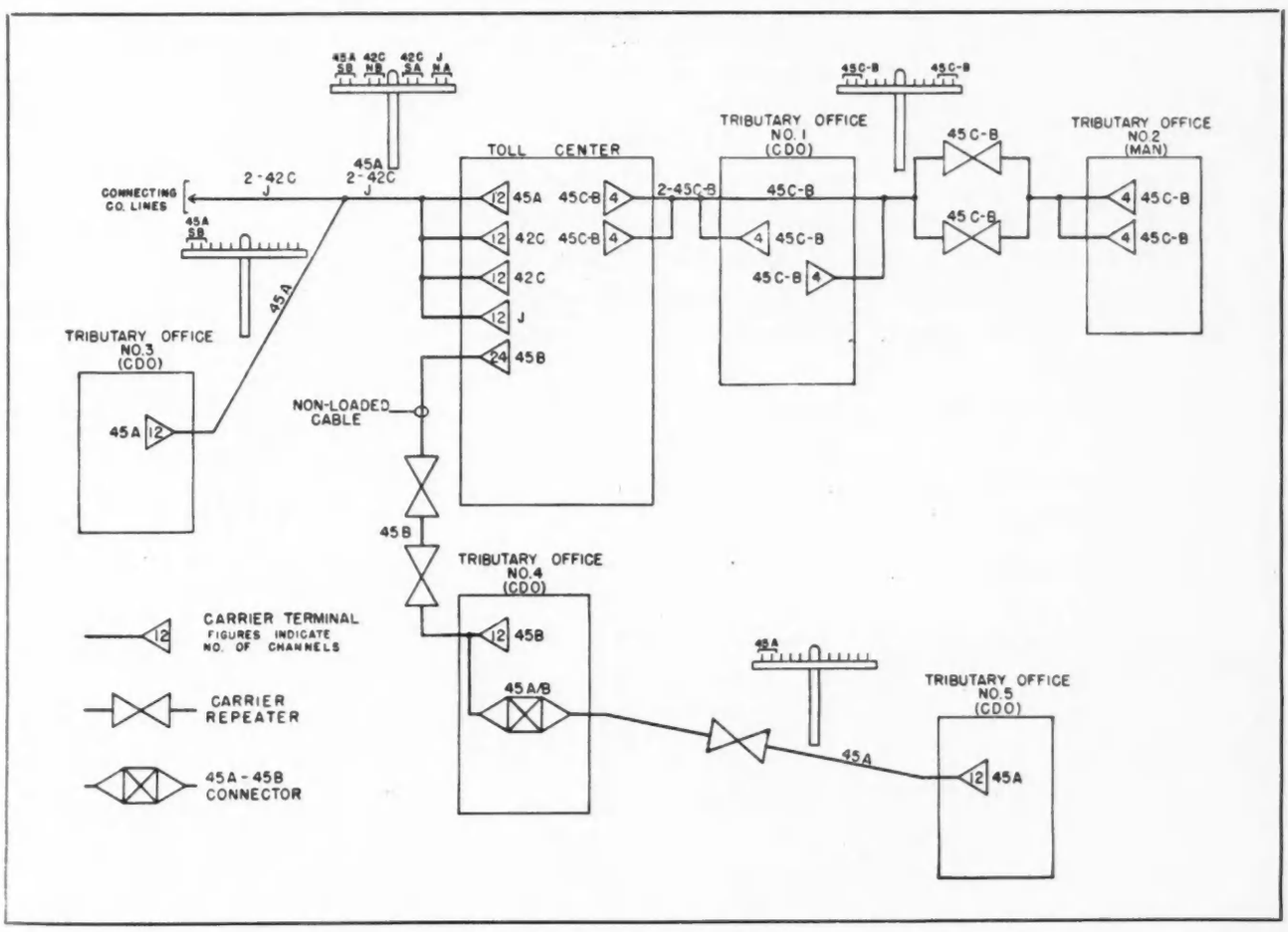

FIGURE 15: — Typical carrier layout between Toll Center and Tributaries.

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dropping 4-channel groups more economically.

(2) Separate repeaters allow systems to be repeated independently as required.

(3) On heavier open-wire leads, more channels can usually be obtained on 30*kc transposed* lines when equipped with 4 channel systems between 40 and 76 kc than can be obtained by equipping with one or two 12-channel systems (which would usually be the limit due to crosstalk limitation).

In addition to the above, compandors are available with both systems to permit their use on lines which do not meet the usual crosstalk coupling requirements, but are provided on the 12-channel system only as required.— THE END.

Book Review

"A Dictionary of Electronic Terms"; 72 pages; price 25c. Published by Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.

Allied Radio Corp. has announced the publication of a completely revised edition of "A Dictionary of Electronic Terms" containing over 3,500 terms used in television, radio and industrial electronics.

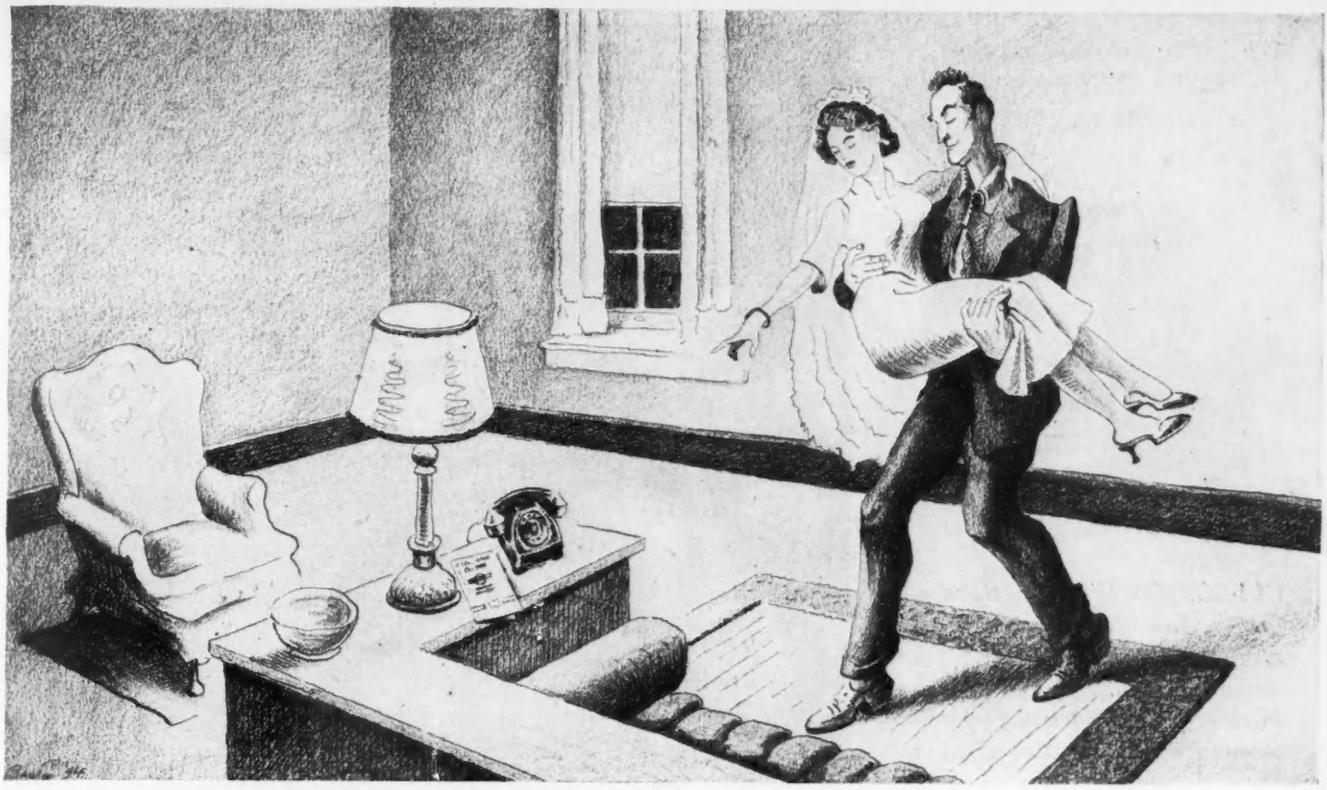
The new publication, edited by Gordon R. Partridge, Ph.D., associate professor of Electrical Engineering, University of Purdue, answers the need for an accurate, up-to-date reference source of words used in the rapidly expanding electronics field.

Definitions cover mostly modern techniques and equipment, but range from many words no longer in general use, retained for historic reasons, to the new language of color television and the electronics of nuclear physics.

Over 150 illustrations and diagrams of components, equipment, and electronic circuits are included.

Printed in handy 6″ x 9″, 72 page format, this new dictionary should prove very helpful as a reference guide for everyone interested in electronics.

Available from Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill., under stock number 37 K 756 for 25c to cover handling and mailing costs.



FIRST TELEPHONE

BY Thomas Hart Benton

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IN SECTION IV-C Mr. Reed continues his discussion of telephone cable development. Section IV-B of this article appeared in the Nov., 1954 issue of "Telephone Engineer & Management."

Modern Cable Construction ....

By John S. Reed

Other Telephone Cable Developments

OTHER IMPROVEMENTS in telephone cable components are in the state of development. Those of principal interest at this time concern the use of aluminum for conductor and sheathing material.

Although aluminum is not the equal of copper from the standpoint of conductivity, being about 60 percent as conductive, it is three times as light and for equal conductivity, costs about half as much. It is also more plentiful than copper. However, aluminum has low tensile strength compared to copper and low resistance to abrasion, which explains why it has not been successful as a substitute for copper or steel conductors in telephone open-wire leads. (In the electric power field these disadvantages have been overcome by stranding aluminum conductors around a steel core wire to produce the commonly used ACSR (aluminum cable steel reinforced), and applying armor rods around the cable at supporting insulators.)

The following table illustrates the comparative physical and electrical properties of copper and aluminum:

	Copper	Aluminum
Conductivity	1	0.61
Weight (equal volumes)	1	0.303
Weight (equal conductivities)	1	0.495
Cross Section (equal conductivities)	1	1.61
Diameter (equal conductivities)	1	1.27
Breaking Strength (equal conductivities)	1	0.65

In spite of the advantages of lighter weight and lower conductor cost, aluminum conductors have not been previously used in telephone cable. The principal objection was that cable made with aluminum conductors would have to be about two-thirds larger in cross section than conventional cable with the same number of copper conductors of equal conductivity, requiring about one-third more lead in the sheath material. This increase in lead con-

tent would more than offset the savings obtained by using aluminum for the conductor material.

Another reason was the difficulty of permanently joining aluminum conductor ends in the manufacturing process, also in splicing cable conductors in the field. Aluminum forms a light film of oxide on exposure to air and this film is non-conducting. This makes the use of "pig tails" in splicing the conductors impractical, since noisy connections would result.

With the development of plastic sheathing for telephone cable, which is less expensive than lead covering, aluminum conductors can be used to effect a reduction in manufacturing costs. For the Bell System, stalpeth cable has been manufactured, which is so light that a piece with sealed ends will float on water. Since aluminum conductors have to be about two sizes larger than copper conductors of equal conductivity, cable gauges are 22, 20, and 17 gauge for equivalent copper conductors of 24, 22, and 19 gauge, respectively. Tests indicate that, in spite of the lower strength of the aluminum conductors, stalpeth cable with aluminum conductors will stand pulling strains better than cable with equivalent copper conductors when being installed.

Methods are being worked out to

Table VIII — Time Units for Handling Poles Used in Cable Plant

Pole Lengths	Hours Labor per Pole Placing	Removing	Moving
16 ft.	1.6	0.4	1.5
20 ft.	1.8	0.5	1.7
25 ft.	2.2	0.6	2.1
30 ft.	2.6	0.9	2.6
35 ft.	3.6	1.1	3.5
40 ft.	4.1	1.5	4.2
45 ft.	4.8	1.8	
50 ft.	5.5	2.0	
55 ft.	6.0	2.2	

Table XII — Time Units for Aerial and Underground Cable Splicing

Size of Cable	Hours — Straight Splices Random	Tag	Hours — Main Frame Tips *
16 pr.	3.0	4.0	
26 pr.	3.0	4.0	4.0
51 pr.	4.0	5.0	5.0
101 pr.	4.0	5.0	8.0
151 pr.	5.0	7.0	
202 pr.	6.0	9.0	12.0
303 pr.	8.0	10.0	20.0
404 pr.	9.0	14.0	24.0
606 pr.	12.0	20.0	32.0
909 pr.	16.0	25.0	
1200 pr.	24.0	40.0	

Hours-Bridge Splices

16 pr. into 26-202 pr.	4.0
26 pr. into 51-202 pr.	5.0
51 pr. into 51-101 pr.	9.0
51 pr. into 202 pr.	10.0
51 pr. into 303 pr.	12.0
51 pr. into 404 pr.	14.0
101 pr. into 202 pr.	12.0
101 pr. into 303-404 pr.	14.0
202 pr. into 303-404 pr.	14.0
404 pr. into 606 pr.	24.0

**Half (or Back) Tapping per pair 0.1*

Table X — Time Units for Miscellaneous Cable Work Operations

Transferring Cable (per span)	0.7 hr.
Pulling Slack Suspension Strand (per span)	0.5 hr.
Pulling Slack in Down Guy (per unit)	0.3 hr.
Pulling Slack in Overhead Guy (per unit)	0.5 hr.
Placing Suspension Strand (per 1000 ft.)	12.0 hrs.
Spinning Cable (per 1000 ft.)	6.0 hrs.
Rodding Conduit Ducts (per 100 ft.)	1.5 to 3.5 hrs.

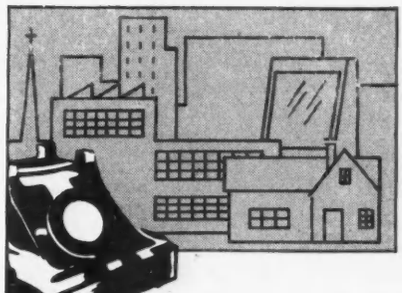
How to CONTROL and ALARM the TOWER LIGHTS of UNATTENDED Microwave and Communication Stations

PHOTO ELECTRIC PANEL
Automatically turns Tower Lights ON and OFF in accordance with FCC regulations
FLASHER PANEL - Automatically Flashes Beacon Lamps — with balanced load provisions.
ALARM PANEL - Automatically provides signals indicating failure of any lamp, power or control.

Model LC 201
TOWER LIGHTING CONTROL UNIT
(for Two Light Levels)
Model LC 101 (for Single Light Level)
Model LC 301 (for Three Light Levels)
Models also available with separate Alarm Signal for each Beacon Lamp.

Write for descriptive Bulletins

HUGHEY & PHILLIPS, INC.
Manufacturers of
300MM Code Beacons, Obstruction Lights, Photo-Electric Controls, Beacon Flashers, Microwave Tower Control & Alarm Units Remote Lamp Failure Indicator Systems, and Complete Tower Lighting Kits.
3300 NORTH SAN FERNANDO BLVD.
BURBANK, CALIF.



As line cords,

Koiled Kords

provide extended service in small homes.

© 1955
Koiled Kords
Incorporated
Box K, New Haven 14, Conn.
*Koiled Kords is a trademark of Koiled Kords, Inc.

overcome the difficulties of joining conductor ends and splicing the conductors in the field. In manufacturing the conductors are joined by welding, though such joints are not as strong as brazed joints in copper wire. In field splicing, the conductor ends are twisted into a pig tail, a compression type sleeve is inserted over the tail end, and crimped to form a tight joint. (Crimped sleeve joints probably would be the best answer to the problem of splicing aluminum conductors to copper conductors.) The splices are insulated with impregnated cotton sleeves in the standard manner. Material and labor costs are increased by the use of crimped sleeves and reduce the savings obtained by using aluminum conductors.

Alumium sheath has been successfully employed on power cables in Europe and to a small extent in the United States and Canada. The latter cables mostly imported, have been made by strip or draw down methods. A cable manufacturing company, the General Cable Corporation, has announced the recent purchase of an aluminum sheathing press of a type which has been commercially successful in extruding aluminum sheathing directly unto an insulated cable core. This company plans to manufacture several kinds of cable with aluminum sheathing, including lighter communication cables for aerial installations.

The new press will be delivered in mid 1955 and installed in General Cable's Perth Amboy, N. J., plant. Representatives of Schloemann, Dusseldorf, West Germany, will supervise installation.

The initial announcement last July of General Cable Corp's. order for the press, and the company's plans to commercially produce this country's first direct-extruded aluminum sheathed cables, stimulated much interest.

"General Cable Corporation has been highly gratified by the response received from the announcement that cables sheathed with direct-extruded aluminum will soon be available to industry in the United States," I. T. Bennett and J. R. MacDonald declared. "We have received many inquiries concerning the development programs we contemplate which will lead to the production of new products in which aluminum will be employed not only for a protective covering but also for other uses. Announcements will be made in due course of our progress . . ."

Please Turn To Page 72

Table XI — Time Units for Placing and Splicing Aerial and Underground Cable and Removing Old Cable

Size of Cable		Aerial Cable			Underground Cable		
		Hours Labor per 400 Ft.		Hrs. Labor per 300 Ft.	Hrs. Labor per 400 Ft.		Hrs. Labor per 300 Ft.
Pairs	Gauge	Placing	Splicing	Removing	Placing	Splicing	Removing
16	19	14.5	3.0	7.0	13.0	3.0	5.0
26	19	15.5	3.0	7.0	14.0	3.0	5.0
51	19	16.5	4.0	7.0	15.0	4.0	5.0
101	19	17.5	4.0	8.0	16.0	4.0	6.0
151	19	18.5	5.0	8.0	16.0	5.0	6.0
202	19	18.5	6.0	9.0	17.0	6.0	7.0
303	19	19.5	8.0	9.0	18.0	8.0	7.0
404	19	19.5	9.0	10.0	18.0	9.0	8.0
16	22	14.5	3.0	7.0	13.0	3.0	5.0
26	22	15.5	3.0	7.0	14.0	3.0	5.0
51	22	16.5	4.0	7.0	15.0	4.0	5.0
101	22	16.5	4.0	8.0	15.0	4.0	6.0
151	22	17.5	5.0	8.0	16.0	5.0	6.0
202	22	17.5	6.0	9.0	16.0	6.0	7.0
303	22	18.5	8.0	9.0	17.0	8.0	7.0
404	22	18.5	9.0	10.0	17.0	9.0	8.0
606	22	18.5	12.0	10.0	18.0	12.0	8.0
909	22	21.5	16.0		20.0	16.0	
16	24	13.5	3.0	7.0	12.0	3.0	5.0
26	24	14.5	3.0	7.0	13.0	3.0	5.0
51	24	15.5	4.0	7.0	14.0	4.0	5.0
101	24	16.5	4.0	8.0	15.0	4.0	6.0
151	24	16.5	5.0	8.0	15.0	5.0	6.0
202	24	16.5	6.0	9.0	15.0	6.0	7.0
303	24	17.5	8.0	9.0	16.0	8.0	7.0
404	24	18.5	9.0	10.0	17.0	9.0	8.0
606	24	19.5	12.0	10.0	18.0	12.0	8.0
909	24	19.5	16.0		18.0	16.0	
1212	24	22.5	24.0		21.0	24.0	
16	26	13.5	3.0	7.0	12.0	3.0	5.0
26	26	14.5	3.0	7.0	13.0	3.0	5.0
51	26	15.5	4.0	7.0	14.0	4.0	5.0
101	26	15.5	4.0	8.0	14.0	4.0	6.0
151	26	16.5	5.0	8.0	15.0	5.0	6.0
202	26	16.5	6.0	9.0	15.0	6.0	7.0
303	26	17.5	8.0	9.0	16.0	8.0	7.0
404	26	17.5	9.0	10.0	16.0	9.0	8.0
606	26	19.5	12.0		18.0	12.0	
909	26	19.5	16.0		18.0	16.0	
1202	26	22.5	24.0		21.0	24.0	
1818	26	25.5	32.0		24.0	32.0	

Here's Proof of Performance...

302 pressure-creosoted poles installed in 1928 *... only one replacement* due to pole failure

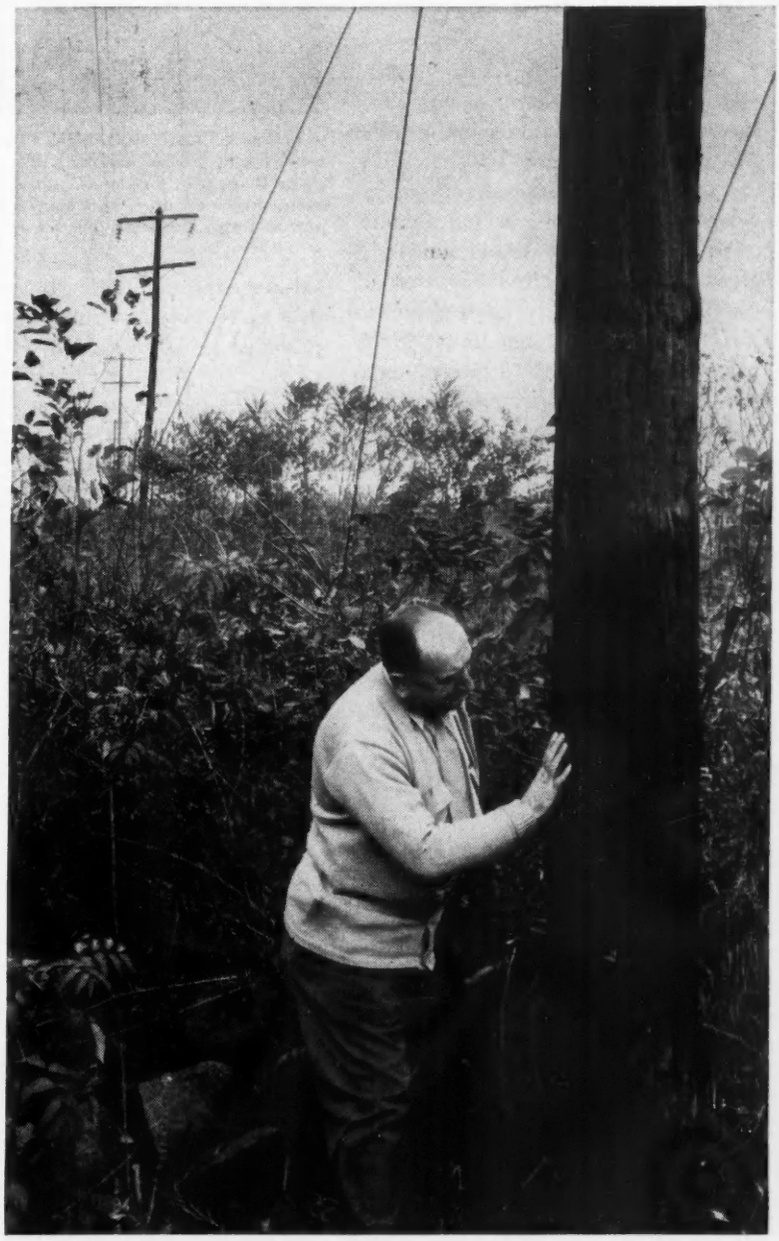
CENTRAL HUDSON GAS & ELECTRIC CORPORATION, serving the Mid-Hudson Valley, with General Offices at Poughkeepsie, N. Y., has more than 100,000 pressure-creosoted poles in its system. The company began using pressure-creosoted yellow pine poles in 1926, one of the first lines to be built being the River Transmission Line from Highland to Newburgh, a distance of approximately 16 miles.

This line was installed in 1928 and 1929, using 302 40′-60′ poles. To date, ten poles have been replaced, but only one due to wood failure. Boring tests made recently show the poles are still extremely sound.

In specifying poles, it will pay you to follow this utility's example and rely on Creosote's unmatched records of service. And when you do, be sure your poles are pressure-treated with uniform USS Creosote. Its deep penetration, retention and high toxicity assure you maximum pole life. For complete information, contact our nearest Coal Chemical sales office, or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

See "THE UNITED STATES STEEL HOUR"—Televised alternate weeks—Consult your local newspaper for time and station.

1929 dating nails on this pole are evidence of the long, economical life of pressure-creosoted poles.



John J. Sotanski, Central Hudson Estimator, inspects pressure-creosoted poles in the company's River Line which have been in the ground more than a quarter century and are still sound, according to recent boring tests.

USS CREOSOTE

SALES OFFICES IN PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SAN FRANCISCO AND FAIRFIELD, ALA.

5-220

UNITED STATES STEEL

(Concluded From Page 70)

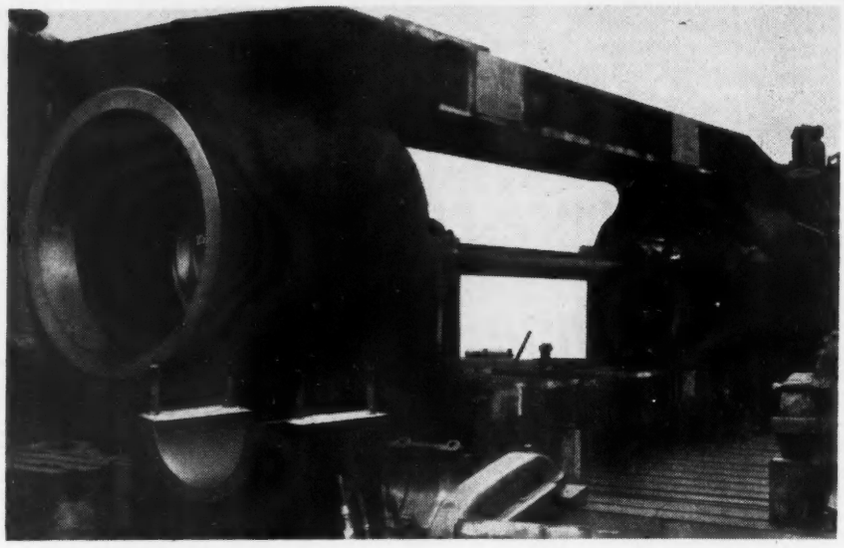
Particular interest was shown, the two General Cable officials stated, in the fact that aluminum sheathing is much less in cost per unit volume than conventional cable sheathing, that it is much lighter in weight and has greater mechanical strength.

Since aluminum is abundant as a natural resource, compared to the scarcer and more expensive lead and copper, its use for conductor and sheathing material will be likely to increase.

Time Units

FOR ESTIMATING costs of cable plant construction and maintenance projects and cable splicing jobs, it is necessary to know the time units for the various work operations involved. The time unit in hours multiplied by the wage rate per hour will give the approximate labor cost of the units involved. Tables *VIII* to *XII* list typical time units. Such units will vary with different companies and with differences in work techniques and types of materials used.

Material costs added to labor costs indicate the total charge per unit. Material costs are determined by consulting supply catalogs or inventory lists or by obtaining quotations from jobbers.



ALUMINUM CABLE SHEATHING PRESS: — Cast steel frame for new horizontal double piston type aluminum cable sheathing press under construction in West Germany was recently seen by Oscar G. Garner, vice president of the General Cable Corp. The frame as photographed is being machined on a horizontal boring mill. Center spindle shown on photograph is not part of frame, but cutter bar for machining of frame. The press will be delivered to General Cable Corp. this year.

Questions on Part IV

(1) What conductor sizes are generally available? Describe quadded cable and explain the purpose of its construction.

(2) What is the composition of lead-sheathed cable? How are pairs grouped in the smaller and the larger sizes of cable?

(3) How does mutual capacitance affect the electrical characteristics of cable? What is the average capacitance per mile of cable?

(4) Referring to tables on lead-sheathed cable, give the resistance and attenuation values per mile for the four different conductor gauges.

(5) Why is textile insulated cable with lead sheath needed at terminations in central offices?

(6) What is the composition of jute protected cable? Tape armored cable? Explain their uses.

(7) Why was paper originally selected for insulating conductors of lead sheathed cable? Until recent years could other material than lead have been successfully employed for sheathing paper insulated cable cores?

(8) What two plastic compounds have come into considerable use as insulating and sheathing material for telephone cable? Give examples of uses for this type of cable. Explain why it is now possible to use aluminum for sheath and conductor material.

(9) What is the difference between "Stalpeth" and "Alpeth" cables?

(10) Explain the value of "time units" in determining cable construction and splicing costs.

Table IX — Time Units for Guys and Other Fixtures on Poles in Cable Plant

Item	Hours Labor per Unit		
	Placing	Removing	Transferring
Cable Arm	0.9	0.5	
Guard Arm	0.4	0.3	
Cable Balcony	1.0		1.0
8" Expanding Anchor	1.1	0.5	
Small Plate Anchor	1.5	0.5	
Medium Plate Anchor	2.2	0.5	
Large Plate Anchor	3.0	0.5	
6000-lb. Down Guy	0.8	0.5	0.7
10,000-lb. Down Guy	1.3	0.6	1.0
16,000-lb. Down Guy	1.4	0.6	1.0
6000-lb. Overhead Guy	1.2	0.6	1.0
10,000-lb. Overhead Guy	1.5	0.7	1.0
16,000-lb. Overhead Guy	2.0	0.7	1.2
Guy Guard	0.4	0.3	
Strain Insulator	0.2		
Pole Seat	0.5		0.5
Pole Steps	0.9	0.1	
Terminal Designations of Pole	0.2		
Ground Rod and Wire	1.0		0.5
Terminal	4.0*	0.2	0.3
Cross-Connecting Box	6.0	2.0*	3.0
Cross-Connecting Box (25 pr.)	6.0	3.0*	3.0
Cross-Connecting Box (50 to 200 pr.)	6.0	5.0*	3.0
Cross-Connecting Box (400 pr.)	6.0	6.0	3.0

**Includes cable splicer's time.*

THE MAIN ENTRANCE to the new General Office of the General Telephone Company of the Southwest is located on the southwest corner of the building. The wing wall (center) of buff brick protects the plate glass windows (right) which range the width of both the north and south walls and also provides privacy for the executive offices lining the south wall.

Public Inspects New General Office of General Telephone Co. of the S.W.

THE DOORS to the expansive, one-story general office building of the General Telephone Co. of the Southwest, El Paso, Texas were thrown open in December, marking another milestone in the company's progress.

Furniture, equipment, and supplies weighing some 400,000 pounds were moved from the temporary quarters in downtown San Angelo to the new building southwest of the city, the week end of November 19-21. The following week end more than 2,000 people viewed the building when open house was held for employes and their families, and later in the day, for the public.

On December 7, the climax to opening events came in the form of: (1) a meeting of the Board of Directors in the new board room; (2) a tour through the building for special guests; and (3) a dinner where Donald C. Power, president of General Telephone Corp., delivered a short adress.

Special guests for the formal opening included Mr. Power, George P. Norton, director of Public Relations for General Telephone Corp.; members of the company's Board of Directors; representatives from connecting companies, manufacturers of telephone equipment, and various civic leaders.

The exterior of the new General Office building features the artistic combination of buff brick, plate glass, and aluminum. Plate glass windows range the width of the north and south walls while brick dominates the east and west sides. Glass and aluminum are used throughout.

The Accounting area, measuring 72 by 192 feet, extends across the glassed-in north wall, and executive offices lie the length of the south side. The largest office area, occupying 125 by 192 feet, is surrounded by semi-private offices having walnut free-standing partitions. One of the building's major innovations, a large glass-enclosed patio, stands near the center of this room. Another note of the unusual is that all metal columns remain exposed — simply painted. Located between the Accounting area and the largest room are the IBM Section, General Files, Printing and Supplies and the Mail room. On the

Please turn to Page 76

ONE OF THE MOST APPEALING exhibits to the over 2,000 visitors to the Open House of the new General Office was the historical exhibit of instruments and equipment furnished mainly by the Automatic Electric Sales Corp. Explaining the exhibit to a group of visitors are R. R. McCULLOUGH, San Angelo district manager (left) and J. M. WALTERS, Central Division buildings and supplies supervisor.

The Real Value of the Telephone

The true worth of the telephone lies in the way it *saves*, as well as *serves*. All telephone people know how calls can save money for telephone users, as well as time and steps. And all telephone companies benefit when users are reminded of this saving.

The advertisement across the page, reaching millions of readers of February magazines, is such a reminder.

Saves $35 Deposit
"My telephone call to a vacation resort to change reservation on apartment saved the $35 deposit I would have lost."
Saves Days of Anxiety
"A telephone call quickly gave me the condition of my nephew after a major operation. I would have been wondering for days."
Saves Pure-bred Cow
Telephone call brought veterinarian in a hurry. "Without it," says farmer's wife, "I would have lost a pure-bred cow."
Saves $10 on Children's Coats
"The telephone helped me save $10 by taking advantage of a sale. I couldn't have left the children to go downtown."

How much Time and Money does the Telephone save for YOU?

A little while ago we left a questionnaire with some housewives and asked them to record the many ways the telephone helps them save time and money. Just a few of hundreds of answers are printed above.

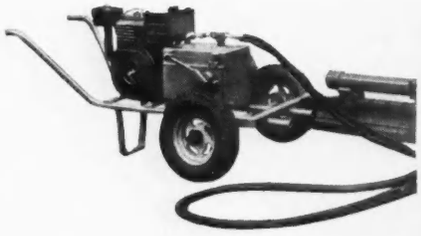
It's true that the telephone saves far more than it costs. But its day-by-day value goes beyond time and money. It serves in so many other ways . . . in friendship, happiness and peace of mind.

BELL TELEPHONE SYSTEM

Reminding you that someone, somewhere, would like to hear your voice today

"Pipe installation time and labor costs cut about 50% with Greenlee Pipe Pusher"

That's what a leading eastern utility reports as its experience with a GREENLEE Pipe Pusher on jobs as shown above. Let this remarkable tool make big timesavings and reduce job costs for you, too. With the GREENLEE Pusher, *one* man pushes pipe *under* streets, walks, floors, railways, lawns, etc. Eliminates extensive trenching and time-consuming tearing up, tunneling, backfilling, repaving. Often pays for itself on the first few jobs. Two models: No. 790 for pushing ¾" to 4" pipe; No. 795 for larger pipe and concrete ducts.



POWER PUMP for all models of GREENLEE Pipe Pushers. Makes the toughest pushing jobs simple, fast for *one man*. Average pushing performance: two feet per minute. Write today for complete details on timesaving GREENLEE Hydraulic Pipe Pushers.

TOOLS FOR CRAFTSMEN
GREENLEE

GREENLEE TOOL CO., Division of GREENLEE BROS. & CO.
2002 Columbia Ave., Rockford, Illinois

LINES OF FILE CABINETS separate various operating departments in the main office area of the new General Office building. Here, Open House visitors look over the rows of desks occupied by the Engineering and Plant (foreground) Departments. Department heads and other supervisors occupy the semi-private offices which surround the main office area and are formed by walnut partitions.

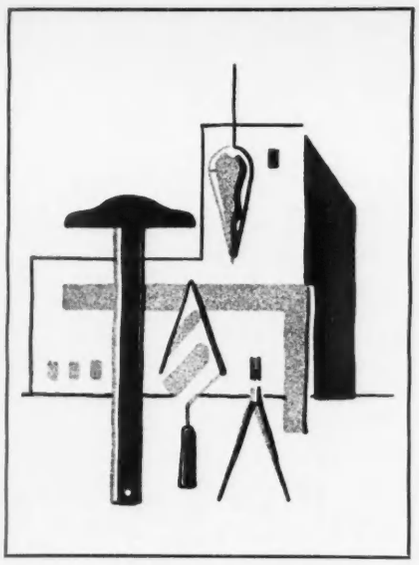
east portion of the building is a lunch room.

With Expansion in Mind

THE NEW HOME of General Telephone Co. of the Southwest, partially surrounded by red cypress fences, lies on a ten-acre area. With dimensions 312 feet long and 192 feet wide, it contains 58,470 square feet of usable floor space and 65,430 square feet under one roof. Its design was projected to accommodate personnel until 1962. The building design also permits a 100-per-cent expansion for possible later use.

Evans & Taylor of San Angelo were general contractors for the building, and PACE Associates of Chicago, the architects. Owned by a pension fund, the building is rented by the company which has a long-term lease.

OPEN HOUSE VISITORS were impressed with this portion of the new General Office when told that these electronic business machines would be preparing their telephone bills sometime in 1955 as the company completes its program of converting subscriber billing to this type of operation.



A monthly report on-

New Equipment and New Methods

NEW LABELS aid dial-cutover program . . . Portable detector locates combustible gas hazards . . . New gas seals for pressurized cable . . . Cable breather prevents outages due to wet cable.

Labels Remind Pacific Bell Subscribers of Dialing System

WHEN "WIDE-RANGE DIALING" went into operation in the San Francisco area recently, Pacific Bell Telephone Co. mailed over 800,000 Contact Labels to subscribers to remind them of the date the new service went into effect. The "Pressure Sensitive" Contact Labels were designed and manufactured by The Archer Label Company, Los Angeles, in collaboration with Pacific Bell's Maintenance Department.

"Wide-range dialing" enables San Francisco and East Bay residents to dial directly to more than 1-million telephones in 50 Bay Area communities, and was instituted at varying times on the many exchanges. The first group of exchanges began wide-range dialing on August 1, 1954. Then each Sunday for the following five weeks another group was added.

NEW LABELS used to tell customers when to start dialing.

THE PROBLEM: — How would each group of customers representing the various exchange groups know when to begin dialing?

THE SOLUTION: — Small "Pressure Sensitive" Contact Labels, or "stickers," to be attached to the telephone by the customer himself. The labels reminded each customer when he used his telephone that on the specified date, "START DIALING YOUR BAY AREA CALLS. *Give the number of this telephone when the operator asks for it.*"

The success of the plan was demonstrated by the smooth manner in which the changeover to "wide-range dialing" was accomplished in the Bay Area, according to executives of Pacific Bell. Confusion was reduced to a minimum, service was boosted materially, and subscribers were pleased with the uninterrupted service.

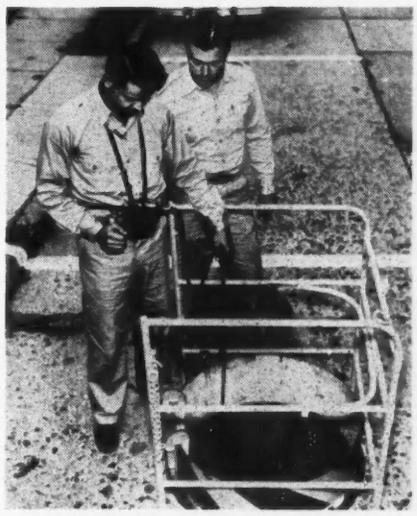
Selection of the proper type of Contact Label entailed much research and testing.

Pacific Bell's Maintenance Department insisted upon a Contact Label subscribers could attach and remove easily in one piece without fuss or muss, without interference or damage to telephones.

Archer "Pressure Sensitive" Contact Labels were finally chosen, as they stick firmly to clean smooth surfaces without moistening and remove easily without leaving any messy adhesive on the surface. The labels are used extensively in the packaging industry, as they stick and stay stuck to Styrene and other plastics, as well as metal, glass, paper, cardboard or any clean, smooth surface.

Gas Detector

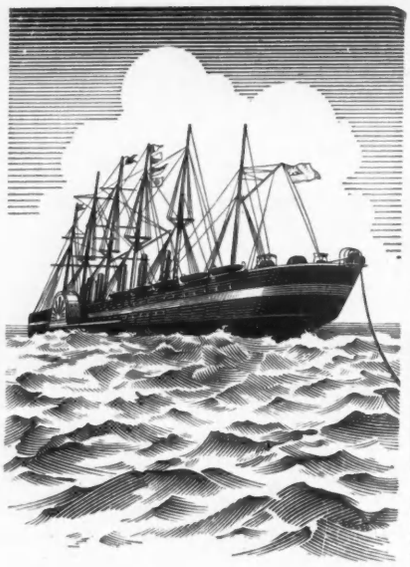
IN COMMON WITH telephone service organizations in other cities, the Bell Telephone Co. of Pennsylvania, Philadelphia, is confronted with combustible gas hazards in underground service ducts and manholes. The firm's method of combating such hazards is an example of modern safety technology.



GAS DETECTOR: — Cable Splicer J. W. FISHER (left) makes an Explosimeter test for combustible gas at a Philadelphia manhole while his helper, R. L. TWOMEY, adds a watchful eye to the meter reading. Bell Telephone Company of Pennsylvania employs about 200 of these portable, compact instruments among its cable splicers and services crews.

Now standard equipment for cable splicers and service crew foremen of the company are 200 portable combustible gas detectors, known as MSA Explosimeters. These instruments are used to check the atmosphere of underground areas before any personnel is permitted to enter.

In gas detection, as well as other safety procedure, cable splicers and service people are thoroughly trained to follow the precepts of one of the most complete safety manuals in existence today. "Bell System Practices" spell out every safety problem, every safety step, and all the detailed



Spanning the Ocean

July 27, 1866 marks a famous day in communication history. For, after four failures, the Atlantic cable was permanently completed from Valentia, Ireland, to Trinity Bay, Newfoundland. Merchants in Chicago and New York were only minutes, rather than weeks, away from merchants in London and Amsterdam.

It is significant to note that the first Hemingray Glass Insulators were made in this same era. In fact, for 84 years now, Hemingray has been dependably serving the communication systems of the world.

Experience and research have made Hemingray Insulators the finest obtainable today. They are available for immediate delivery at most jobbers . . . in any quantity . . . in types for all telephone and telegraph pole lines. Send for a free catalog.

HEMINGRAY INSULATORS

AN (I) PRODUCT

OWENS-ILLINOIS

GENERAL OFFICES · TOLEDO 1, OHIO

how-to-do-it procedure necessary to guard against manhole and duct hazards.

Practices detailed in the Bell Telephone Co. manual embody American Telephone and Telegraph (AT&T) standards and provisional practices, standards for particular conditions and any unusual local situations that may require special attention.

Philadelphia provides an example of such a "local situation." Manufactured gas — with a characteristic and easily recognized odor — has been succeeded by a mixture of natural and manufactured gas for heating and cooking in many homes and business establishments. Because this "enriched gas" is more elusive to man's sense of smell, cable splicers and service crews rely on the Explosimeter to check the atmosphere, according to Sam McKay, safety director.

This instrument, a development of Mine Safety Appliances Co., is simple to operate. A sampling line is lowered into the opened manhole, and an atmosphere sample is drawn in to the instrument by an aspirator bulb. The sample then enters the filament chamber where it comes in contact with a hot filament which is part of an electric bridge circuit. Any combustible gas or vapors in the sample burns on the surface of this filament and increases its temperature. The resulting change in electrical resistance of the filament unbalances the bridge, causing electrical current to flow to the meter. The magnitude of the current flow is directly proportional to the percentage of combustible gas — up to the lower explosive limit in air — in the sample mixture.

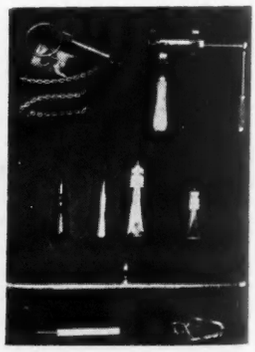
A general introductory section of the Bell manual on manhole atmosphere testing contains a special supplement on the use of the MSA Explosimeter and other gas-detecting equipment and provides a summary of some of the gases commonly encountered in manholes in today's cities.

New Gas Seal for Pressurized Cable

A NEW cold-setting cable plug compound based on a "Thiokol" Liquid Polymer/epoxy resin sealer has been announced by Thiokol Chemical Corp., Trenton, N. J. According to the manufacturer the compound has made possible the installation of higher quality gas plugs in pressurized telephone cables with considerable savings in cost.

The sealer is a liquid two-package compound that requires only simple mixing prior to injection at desired points in the cable. Installation of plugs in small cables with this new sealer can be made by one man in a relatively short time and is accomplished with a few simple tools. In contrast, the use of asphalt as a cable plug involves the labor of two men, the use of considerable equipment for heating and application and is considerably more time consuming.

This new "Thiokol" liquid polymer/epoxy resin sealer was developed after extensive laboratory and simulated service tests of numerous compounds. One component of the two-package mix consists of a low molecular weight "Thiokol" liquid polymer and an amine curative. The other component is a liquid epoxy resin. After mixing, the compound is injected as a liquid into the cable and penetrates the paper insulation



NEW CABLE PLUG COMPOUND: — Left, A lineman is squeezing one of the packages of the cable sealing compound into the gun prior to mixing and application of the compound. Center, after the filled gun is screwed onto the cable fitting, the lineman forces the sealing compound into the cable core. In 24 hours the compound sets and forms a reliable gas dam. Right, the tools a lineman uses to make gas seals in telephone cables. The section of cable shows that constrictions in the cable sheath are unnecessary with this compound.

and fills all interstices between the wires and the sheath. The compound sets without shrinkage to an elastomeric resin in 24 hours at 70°F and forms a reliable gas dam with an estimated life of 20 years.

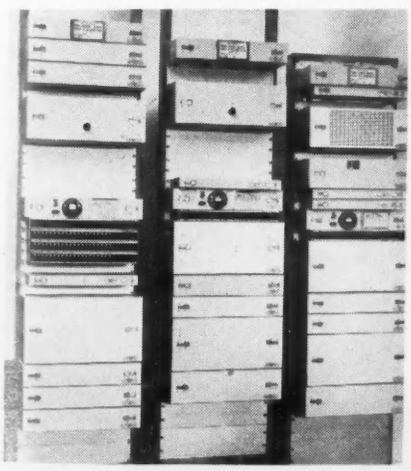
In simulated service tests, the seals maintained their properties during repeated temperature cycling of -40 to 150°F. This was confirmed by rigorous field tests in extensive installations both in northern and southern areas where high performance was consistently maintained under severe conditions.

Special properties of the cured compound that contribute to its performance in this application are its gas impermeability, aging resistance and non-corrosiveness to metals. Additional attributes of the material that may suit it for other fields are its remarkable resistance to a wide range of aliphatic and aromatic solvents and many corrosive chemicals.

Control and Supervision of Remote Equipment Location

A NEW SYSTEM for control and supervision of remote equipment locations has been developed by the Lenkurt Electric Co., San Carlos, Calif.

The new system, designated Type 51B, provides for two essentially independent functions: (1) a means for supervising conditions at remote lo-



CONTROL SYSTEM: — System for control and supervision of remote equipment locations.

cations from a control center, and (2) a means for controlling operations of equipment at the remote locations from the control center. Information for both functions consists of d-c pulses translated into tone sig-

Please Turn To Page 82

ONE TON CAPACITY

Linemen call this hoist a "HONEY"

Designed especially for line work

Here's a strong, fast-operating, light-weight hoist (12 pounds) with a flexible steel load chain that won't kink, bind or uncouple. Controls can be worked without removing gloves. It's rated to lift a one-ton load and it's tested to 3000 pounds.

THIS CHANCE HOIST HAS ALL THE FEATURES LINEMEN WANT

- Well-balanced, easy-to-grip handle. . . operates from either side
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- All working parts fully enclosed in the housing to prevent injury to fingers.

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CT55-2

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The proved and standard protection for Underground Telephone Cables. Highest quality and full line of shapes.

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IT'S A LIFE SAVER

IT LOCKS—IT HOLDS

Prevents death and injuries from falling.

SAFETY DEVICE FOR LADDERS

Easy and inexpensive to install: Clamps to rung, peg, pole or frame. No welding or cutting.
Simple to operate: No upkeep. Requires no attention from climber. Anyone can use it.
Safety Specifications: High safety factor. Will not rust or corrode.

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GREEN CROSS FOR SAFETY

ALSO MANUFACTURERS:
SAFETY LIFELINE LOCK
for scaffolds
Member
National Safety Council

U.S. ARMY PHOTOGRAPH

Conversation piece for Uncle Sam

When the Signal Corps came to Western Electric and Bell Laboratories with ideas for a new field telephone set, we gladly put at their disposal all of our development and production know-how.

Naturally, this new set had to be really rugged. And you can bet it is. Weighing but 8½ pounds, it can take the pounding of heavy artillery shock waves, yet transmit a whisper. It works in temperatures from 40° below zero to 130° above — can even be dunked in water without damage.

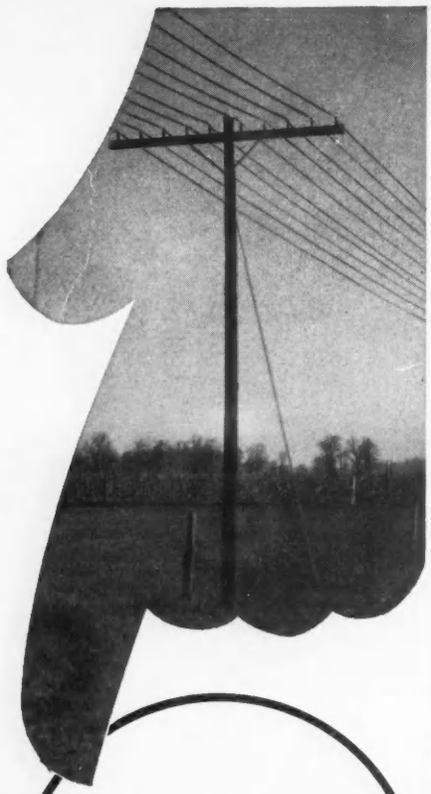
This improved set can talk 20 to 30% further than the old set on just a pair of flashlight batteries. Without batteries — even with the transmitter damaged — the soldier can talk up to five miles by speaking into the receiver.

To meet varied combat conditions, there's a new "woodpecker" signal that can be adjusted from a barely audible level to a clatter that cuts through battle noise. Another new feature is the tapered handset which fits easily under a helmet.

Everybody has heard how progressive telephone technology has been applied to national defense weaponry — radar, guided missile systems, and so on — but it should be remembered that technological progress is also being made in the less dramatic but equally important field of telephone communications systems for our Armed Forces.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM



Crapo
HTL-135
INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA U. S. A.

LOWER
Cost Per Mile

● Efficient rural telephone circuits can be built at minimum overall cost where *Crapo* HTL-135 High-Tensile Line Wire is used to full advantage. For *Crapo* HTL-135 makes possible spans up to 350 feet in heavy, 540 feet in medium and 650 feet in light loading districts. Longer spans mean fewer pole structures with substantial savings in material and labor costs per mile.

The rugged tensile strength of *Crapo* HTL-135 and its heavy galvanized coating provide dependable and economical service life on typical rural lines.

Ask your jobber for details or write direct for engineering data!

INDIANA
STEEL & WIRE COMPANY
Muncie, Indiana

nals for transmission over any suitable wire or radio circuit.

Standard system assemblies for the 51B equipment are designed on a flexible basis so that individual operating requirements can be met without extensive special engineering.

Designed primarily for use on multi-station radio routes, the new system can also be used wherever information must be gathered from remote stations and transmitted to supervisory personnel at a central attended location.

This system can supervise as many as 80 remote conditions and control up to 90 remote operations. Eight or more remote locations can be associated with each control center.

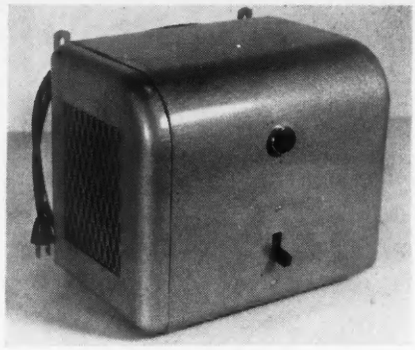
Additional information on Lenkurt Type 51B supervision and control systems is available from, Automatic Electric Sales Corp., 1033 West Van Buren St., Chicago, Ill.

New Regulated Battery Charger

NO LONGER IS it necessary for 2-way radio-equipped vehicles to keep engines idling while off-the-road work is being done. Truck batteries can now be charged right in the field with a new regulated battery charger, designed primarily for utility trucks equipped with 2-way radio and other accessories requiring a 6-volt D. C. power supply.

Devised for use in the field with an Onan A. C. Electric Generating Plant, the manufacturer claims this 12″ x 10½″ x 9¾″ battery charger keeps batteries charged at a minimum of cost. It draws its A. C. input power from the auxiliary electric plant, takes over the D. C. load, charges the 6-volt storage battery and provides up to 25 amps. for powering the 2-way radio equipment before any demand is made on the battery.

The unit can be used in any garage, service station or other building utilizing 110-125 volt, 60-cycle current. Simply plug the Onan battery charger into a convenient outlet and charge up the battery overnight.



New regulated battery charger is designed primarily for trucks equipped with radio.

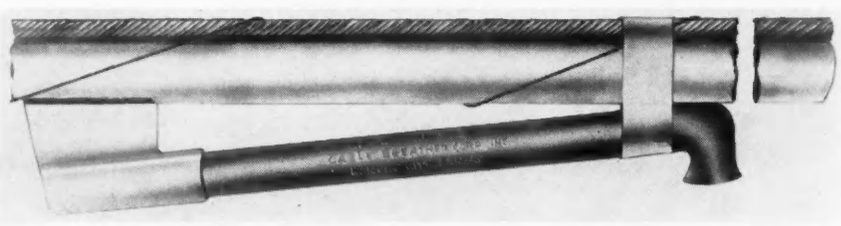
The charger contains no moving parts . . . the charge rate is controlled by a magnetic amplifier. An automatic reset circuit breaker protects the charger against overload.

Cable Breather Designed to Prevent Wet Cable Trouble

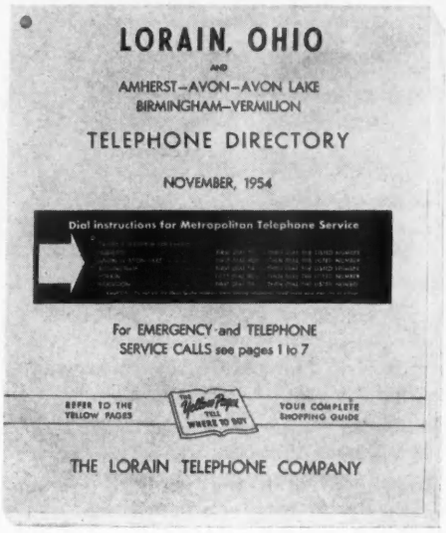
THE CABLE BREATHER CORP., Inc. P. O. Box 148, Kansas City, Kans., is offering a new device that is claimed to prevent outages due to wet cable. Illustrated on this page, the Cable Breather is installed on aerial cable at recommended intervals of 600 feet regardless of the size of the cable. It has a moisture absorbing filter which removes the moisture as air is drawn in due to cooling of the cable at night. During the day, the dry air inside the cable expands and leaves through the filter, thus drying out the latter automatically. The Breather thus equalizes the pressure of the air inside the cable and of the atmosphere. This equalized pressure prevents moisture from being drawn into the cable through fatigue breaks in the cable sheath.

New Adhesive Agent

DETAILED information concerning *Placco* 1000, the newest in high-strength adhesive agents for telephone



BREATHER: — The Cable Breather was developed to prevent moisture entry through cracks in cable by equalizing the air pressure inside the cable with the pressure of the atmosphere.



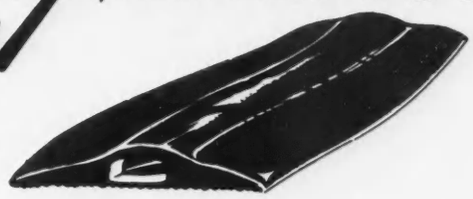
A directory for
The Lorain Telephone Company
printed by

R. R. DONNELLEY & SONS COMPANY

350 East Twenty-second Street, Chicago 16

Do you know these facts about

FLEXIDUCT?



It's the new rubber floor duct that solves over-floor wiring problems quickly and effectively, with adequate protection from sweepers, mops and equipment on casters. Installation is easy and permanent. You just fasten Flexiduct in place with its own special cement. There's no drilling or necessity to use screws and fasteners. Flexiducts' flexibility allows it to adhere evenly and securely to all types of floor surfaces and it is adaptable for installations ranging from 2 conductors to 25 pair switchboard cables. Write for complete information regarding Flexiduct and your wiring problem today.

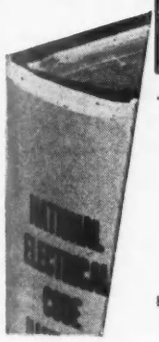
Export Agents | **The Ericsson Corporation**
100 Park Ave. New York 17, N.Y.

For further information, write for circular 753 A.

BUCKEYE TELEPHONE & SUPPLY COMPANY
1250 KINNEAR ROAD Kingswood 0655 COLUMBUS OHIO

How to handle electrical wiring and installation jobs

in strict accordance with the 1953 National Electrical Code



JUST OUT! 8th Edition of ABBOTT'S

NATIONAL ELECTRICAL CODE HANDBOOK

Revised by CHARLES L. SMITH
Electrical Field Engineer of the National Fire Protection Assn.
642 pages, 5½x8, 394 illus., $7.50

YOU can get exact meaning of Code rules—how they apply to the job you're doing—quickly and easily with this practical handbook. It explains rules in simple, clear words—and uses diagrams, tables, and photographs to make sure you understand every vital point.

New form and typesetting make book easier to use.

New arranged in same order as Code.

Meanings of rules stand out in contrasting typeface

***Eighth Edition is completely revised*—presents meaning of a rule in contrasting typeface to rule itself—thus making for faster, easier reference.**

***Includes all changes and additions* of the 1953 National Electrical Code. Handy index lists Code rules applying to all types of electrical jobs, arranged under job title. Thus, you can be sure no rule is overlooked.**

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TELEPHONE ENGINEER PUBLISHING CORP.
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Communication Engineers!

The world's largest independent supplier of Carrier equipment offers permanent positions, good starting salaries, and unusual opportunity for progress. We can make you a very attractive offer if you have had experience in any of the following fields:

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Please write giving full details of your background to:

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AUTOMATIC AE ELECTRIC

ELECTRICIANS!

Here's a new convenience in cutting pliers

It's simple but plenty effective! The *cushion* is tough, rubbery red Plastisol bonded right beside the cutting edge. As the pliers close, the *cushion* grips the short end of wire, holding it tightly.

The *"Cushion Throat"* is specially valuable in electronics work... makes cuts inside chassis without danger of wire snips falling into set. Grips spring or hard wire too—safety feature keeps wire from flying! Order from your distributor!

Only $1 list additional—applied to most UTICA diagonal or side-cutting pliers.

EXCLUSIVE UTICA PATENT

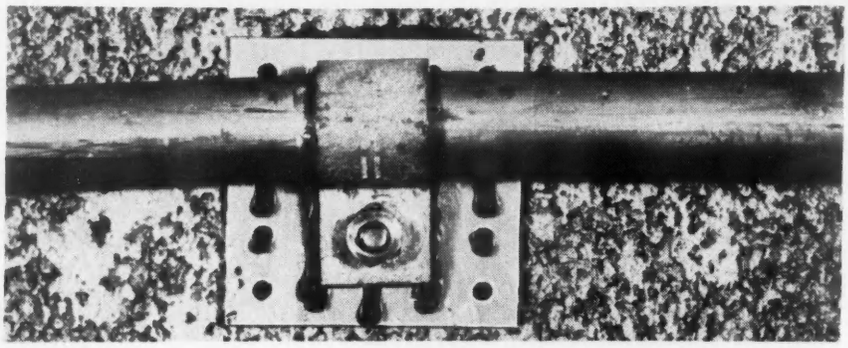
UTICA
"Cushion Throat" Pliers

UTICA (when referring to hand tools) is a trade mark registered in the U. S. Patent Office.

U TI CA

THE HALLMARK OF QUALITY
UTICA DROP FORGE & TOOL CORP.
UTICA 4, N. Y.

In Canada: Adlam Tool & Supply Co., Ltd., Montreal



HANGERS: — Adhesive-type Hangers used with Placco 1000 for wire and cable installations.

wire and cable hangers, is now contained in an illustrated bulletin available from Pioneer Latex and Chemical Co., Lincoln Blvd., Middlesex, N. J. The bulletin includes a complete line of wire and cable hangers in both stainless and galvanized steel in addition to the one illustrated.

According to the bulletin, *Placco* 1000, with its great holding power, is proving to be an important technical advance to telephone companies throughout the nation, offering low-cost installation of wire and cable hangers, and backboards. The Pioneer company offers to provide at your request, full details of actual telephone company experiences with *Placco* 1000.

A recognized independent testing laboratory reported recently that a two-inch square bond of *Placco* 1000 will stand a pull of over 300 pounds at a temperature above 300 degrees F.

Pioneer's bulletin points out that many surfaces, even wood and masonry, will tear away before their new adhesive will fail. In addition *Placco* 1000 has the advantage of easy use in congested, hard-to-reach quarters and is applied noiselessly.

A quick-setting, heavy bodied, rubbery material, *Placco* 1000 will adhere equally well to porous and non-porous surfaces. Tests show it to be waterproof, heat resistant, permanent under all weather conditions, corrosion resistant, flexible, non-inflammable, non-toxic, and resists the harshest actions of minerals and chemicals.

According to the bulletin, *Placco* 1000 is recommended for installation both indoors and out, on surfaces of metal, masonry, tile, marble, terra cotta, and glass, where its usage eliminates the problems of drilling and many other difficulties.

"Keeping Track of 50,000 Freight Cars"

EVER STOP TO consider the problem railroads have in keeping track of thousands of freight cars as they roll across the countryside carrying goods? This is a complex job when you realize that these cars are interchanged between railroads and a detailed account of all car movements must be kept for shippers' inquiries and for billing and revenue purposes.

For a fast, dependable and efficient method of handling car reporting, the New York Central has ordered from AT&T Long Lines an 81-D-1 automatic tape relaying teletypewriter system. Designed to help provide a continuing check on the movements of 53,000 freight cars traveling daily over Central's tracks, the system will have switching centers at New York, Cleveland, Indianapolis and Detroit and will connect 82 New York Central freight yard locations.

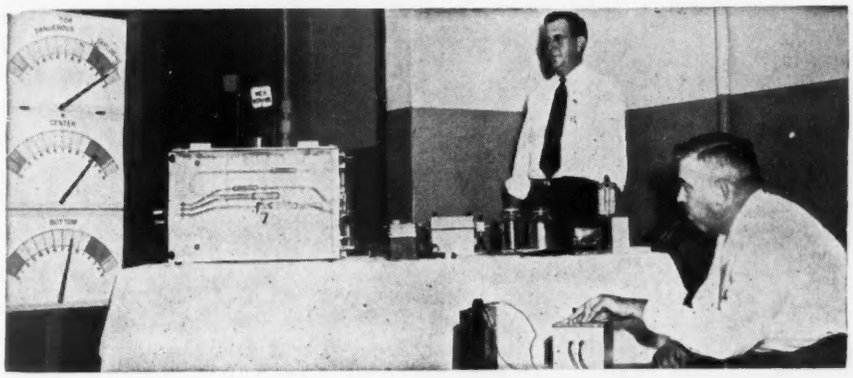
The new system, which will produce an annual revenue of over half a million dollars, represents the largest sale made by the Bell System in the right-of-way field. In conjunction with IBM punch card machines, it will expedite the preparation, processing and transmission of all freight car records. The railroad can then report promptly to its shippers the exact whereabouts of their loaded or empty cars, and can also effect a faster switching and rerouting of individual cars.

Gas Detection . . . (Continued From Page 55)

up through a bottle of water so that the gas flow can be observed and also to act as a trap against a flash back.

To ignite the explosive gases, five spark plugs are provided, one in each of the four corners and one at approximately the center of the box. These five plugs are connected to a flexible cable which terminates in a control box containing an automobile spark coil. The circuits of the control unit are so arranged that one or all of the spark plugs may be energized at the same time.

To demonstrate the effectiveness of ventilation, a small ventilating unit operated by an electrical motor is used. This unit is made to scale in order to furnish the same degree of ventilation as regular ventilating units furnish to a standard manhole. Since the model manhole is made to 1/4 scale, its volume is 1/64 of a regular manhole.



H. F. WHITNEY, Southern Bell's plant safety supervisor, and C. W. McMullen, construction supervisor, both of Georgia division, demonstrate the use of gas unit explained in the story.

For demonstrating the explosive features of gas, the model manhole is filled with a simulated natural gas which has a specific gravity of about .63 and is composed chiefly of methan. To determine when the gas concentration reaches an explosive mixture, samples are taken through three openings at one end of the box. Due to the distribution of the gas, it is necessary to accurately measure the percentage of gas concentration at various levels in the manhole by a specially calibrated instrument.

When the measurements indicate the gas concentration is above the lower explosive limit and below the upper explosive limit, it is ignited by energizing one of the five spark plugs. The result is an explosion and the plexiglass front on the model manhole permits the audience to obtain some idea of what the inside of a closed chamber looks like during a gas explosion.

Large colored meter charts are used in order that the audience may at all times, read the concentration of gas at the various levels in the manhole. With this equipment it is possible to admit gas into the manhole in such a manner that explosions can be controlled to the extent that the energizing of the spark plugs will not cause the gas to explode except at the desired level, since very lean or very rich mixtures will not explode.

For instance, if it is desired to create an explosion by energizing the spark plug in the center of the manhole, the gas is admitted so that the mixture in the upper portion of the manhole is above the upper explosive limits of the gas and the mixture in the lower level is below the lower explosive limits, while the mixture in the center is within the explosive range between the upper and lower explosive limits.

Therefore, the energizing of the spark plugs in the upper and lower levels of the manhole would not cause the gas to ignite and explode, whereas, a spark from the plug located in the center would result in an explosion.

The gas supply is, of course, contained in safe standard cylinders equipped with regulators and pressure gauges.—*Reprinted from "The Southern Telephone News."*

WHY $12,000-$20,000 JOBS ARE THE EASIEST TO GET TODAY

Here Are Some Surprising Facts About the Serious Shortage of High-Salaried Executives

What You Can Do To Qualify for Top-Level Jobs Open Right Now

SURPRISING at it may seem, the really big jobs today are the hardest to fill—and the easiest to get. Men who can handle top-management jobs can now choose from any number of openings that pay $12,000, $15,000, $20,000 or more.

J. K. LASSER

It was J. K. Lasser, famous business and tax expert, who went after the facts about the scarcity of qualified men for high-salaried jobs. Polling the heads of companies in many fields, he consistently heard from them the same answer. What men in the middle brackets need to make the high-salary grade, these men told Mr. Lasser, is a general, well-rounded knowledge of business procedure.

Gives working methods of top men

This simple answer gave Mr. Lasser an idea for a brand new plan that would literally lead men out of the $5,000-$10,000 plateau and into the top jobs. He asked the foremost men in every field to reveal working methods that have brought success in marketing, public relations, accounting, budgeting, insurance, and "know-how" in every business procedure for top management.

Mr. Lasser consulted only top men, such as business analyst Roy A. Foulke, Vice-president, Dun and Bradstreet; marketing expert Marion Harper, Sr.; nineteen executives nationally known for their successful methods. Then he simplified and "boiled down" this wealth of knowledge into J. K. Lasser's BUSINESS MANAGEMENT HANDBOOK.

What you learn from these executives

Through this book the businessman is able to view each department operation from the top down, with an expert as guide. He learns to talk, think, and plan with the kind of well-rounded authority expected of top management.

In this book you learn streamlined methods of distribution, how to design systems for internal control of business, how to control operations through budgeting, how to avoid business frauds, how to cut paper work in half—to mention only a few helps. Men who truly want to get ahead can ready themselves for the next step up with this HANDBOOK. Order your copy today. The price is just $8.50.

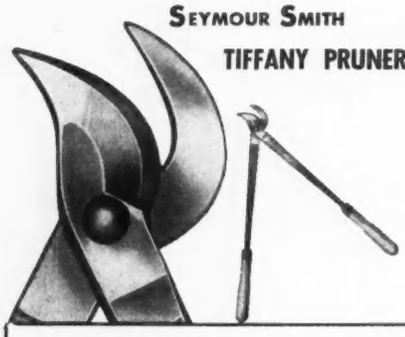
Telephone Engineer Publishing Corp.
7720 Sheridan Road,
CHICAGO 26, ILLINOIS

Illustrated above is No. 11 Tree Pruner with center cut action by tempered steel blade that easily handles 1" branches. Head is reinforced malleable iron. Spruce poles with telescoping aluminum joints. For heavier work No. 12-18, capacity 1½". Also Pole Saws.

for clearing brush . . .

SEYMOUR SMITH

TIFFANY PRUNERS



Hand forged throughout. Fast and easy double cut action with thin blades shaped to "draw in." Improved bolt and nut joint, through handle and riveted grip fastening.

FAST-CUTTING SAWS

Blades of Swedish charcoal steel. Large, deep teeth with heavy set to prevent binding. Hand and Pole models for all work up to chain sawing.

Quality Tools
SEYMOUR SMITH
Since 1850

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Seymour Smith & Son, Inc.
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Oakville, Conn.

Automatic Education With Poster-Slide Provides Accident Prevention Tool

"PRODUCTION problems are attitude problems," is the underlying theme of the industrial education programs currently being presented to employes by the Poster Slide Co., 10 East Kinzie, Chicago, Ill.

Analysis of production costs, accident records, tool breakage reports, machine downtime, absenteeism, and similar factors which increase production costs, has shown that to a very large degree those hindrances to productivity and profit are traceable to employe job-attitudes and supervisory work-habits.

To reinforce the efforts of the supervisory organization in developing productive employe attitudes and reducing manufacturing costs and accidents, the Poster Slide Co. in 1954 developed an entirely new medium of employe education: safety and productivity impact posters on full natural color 2 x 2 Kodachrome slides.

These impact Poster Slides are projected from behind a special translucent plastic screen in the Admatic Automatic Slide Projector, which has been used in sales displays, promotional and educational activities in industry in thousands of installations since 1946.

Edmund Mottershead, president of Mottershead Associates, consultants in industrial relations and employe communication, and nationally-known author and speaker on industrial relations problems, has headed up a team of artists and creative people who designed the posters, developed slogans and copy, and created the poster-slide program called "Automatic Education."

"Automatic Education," as a continuous program, consists of a monthly program of 30 impact poster slides, projected automatically on a 7-second interval in the Admatic Automatic Projector. The projector unit, which stands approximately 5½ feet high, occupies floor space 28" wide and 18" deep. It shows a brilliant picture 16 x 23 inches in size, clearly visible for 50 feet or more.

In action, 15 poster slides on a safety subject are interfixed with 15 poster slides on a productivity subject for continuous showing automatically, 8 hours a day, 24 hours a day, or at predetermined intervals of an hour or two at lunch periods or shift changes.

THE PROJECTOR shows a picture 16"x23", clearly visible for 50 feet or more.

Each set of 15 slides on safety, and each set of 15 poster slides on productivity has an accompanying training guide for use in foremen and supervisor training sessions. The projector has a stop-and-go control which permits "freezing" of any poster-slide at any time so that it may be held in position for discussion. This is especially valuable in safety meetings concerned with right and wrong shop practices, housekeeping conditions, analysis of machine guarding problems and similar safety discussions.

Subjects included in the poster-slide program include safety topics such as "Be Alert," "Good Housekeeping," "Falls," "Correct Lifting," "Sight Savers," "Hand Tools," "Safety Styles," "Follow Safety Rules," and "Play Safe Today."

Productivity subjects included in the "Automatic Education" program include such topics as "New Ways Work," "We Are All Salesmen," "Stop Waste," "Work Together," "Your Job Is Important," "Be A Good Neighbor," "Compete Better To Live Better," "Keep Equipment Running," and "Produce For Prosperity."

Safety poster slides are produced from original materials of the National Safety Council, under a license arrangement, with the supervision of the National Safety Council to insure the quality and validity of the safety

messages on the slides. Productivity posters utilize 4, 5, and 6-color art from national artists and photographers, adding compelling attention value to the attractive messages.

Released for public examination for the first time at the 1954 National Safety Congress in October, "Automatic Education" has aroused considerable interest among safety and personnel executives who are looking for a truly new medium of employe education which will add drama to the safety story and increase employe acceptance of poster-type messages.

The glass-mounted slides used in the projector are standard 2″ x 2″ Kodachrome slides, such as any personnel or safety man can take with his own conventional 35mm camera. The Admatic Projector will accept these "home-made" slides equally well to supplement the standard poster-slide program; or the standard slides may be used in any conventional 35mm slide projector.

The projectors may be purchased on either an outright purchase or rental-purchase plan. Poster slides are sold outright either in a bulk "library" of sets, or on a monthly subscription plan at nominal cost per month.

44.3% of U.S. Farms Have Telephone Service

On July 1, 1954, percentage of US farms with telephone service — 44.3% — was the highest on record, the Department of Agriculture's Crop Reporting Board declared recently after a survey of farm telephone installations and rates. The survey showed that the total number of farms with telephones, about 2,400,000, was below the 1920 figure of slightly more than 2,500,000, when there were many more farms.

According to the survey, about 4% of all farm telephones on July 1 were on a private line, 20% were on two-to-four-party service, 43% were on five-to-eight-party lines, and the remaining 33% on lines with nine or more parties. In the past year, it was brought out, there has been a decline in the percentage of farmers on lines with nine or more parties.

By type of service, it was reported, as of July 1 about 35% of farmers had magneto service, 20% were on common battery manual switchboards, and 45% had dial service.

Local exchange rates paid by farmers averaged $3.33 monthly, compared with $2.05 in 1947. This was an increase of 3% above a year earlier. Total monthly charges, for both local and long-distance service, averaged $4.92 per farm, compared with $4.95 a year previously. It was emphasized that "For the most part, the increase in local bills was accompanied by an increase in quality of service."

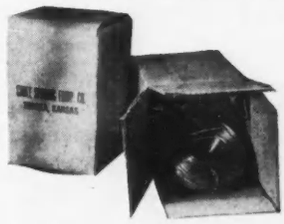
Average local bills showed a decline only in the Pacific states, while the Middle Atlantic states remained about the same. The South Central and Mountain states showed the greatest increase.

Pettygrove Named To Nebraska Commission

Paul E. Pettygrove, Oxford, Nebr., attorney and a former Federal Bureau of Investigation agent, has been appointed to the Nebraska Railway Commission to fill the vacancy caused by the death in December of Commissioner Harold Palmer. Mr. Pettygrove was named for the balance of a term expiring Dec. 31, 1956.

Here's the Neale Model K Pull Type Spinner—engineered for versatility. It's doing a great job on electric power lines . . . and telephone lines, too! Model K has a maximum capacity of three 2″ O.D. cables, and will spin single cable as small as ⅝″ O.D. This spinner may be used with either one or two coils of spinning wire, so you may have either a 13″ spiral or wire 6½″ apart. Model K is furnished with two LC5 Lashing Wire Clamps, tow rope, cable placing dolly, and chest.

Use Neale Wire For Best Results



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CABLE SPINNING Equipment Company PHONE 2-7234

3100 TOPEKA AVE. TOPEKA, KANSAS

Suppliers' NEWS Briefs

A monthly department featuring condensed reports on activities of the manufacturers and suppliers serving the Independent Telephone Industry.

Telephone industry manufacturers and suppliers are invited to send in news releases for use in this department.

RETMA To Sponsor Meeting of Electronic Equip. Mfgrs.

THE RADIO-Electronics-Television Manufacturers' Association's (RETMA) fourth annual general membership meeting of manufacturers of commercial and military electronic equipment and components will be held in New York City on March 20, immediately preceding the annual show and convention of the Institute of Radio Engineers.

F. R. Lack, chairman of RETMA's Electronics Industry Committee, said the meeting will present a forum for electronic manufacturers who are members of the RETMA Technical Products Division and receive services from the association's government relations department.

Norman Sted Named To New Sales Post

NORMAN M. STED, who started his career with American Steel & Wire Division as an office boy in Cleveland, last month was named to a key sales executive position with the United States Steel unit.

John Graham, American Steel & Wire's general manager of sales, announced Mr. Sted's appointment as assistant general manager of sales. In his new capacity, Mr. Sted will assist Mr. Graham in handling all general sales activities of the division.

Twenty-nine years ago, Mr. Sted joined the division in the order department. He held several different posts before being transferred to the sales department as a clerk in April, 1934. He served successively as a price clerk, assistant chief clerk, and chief clerk before being named office manager in April, 1939. He was assistant to Cleveland district manager of sales from December, 1943, to September, 1945, when he was promoted to assistant manager of the manufacturer's products sales division of the general sales department. Mr. Sted was appointed manager of manufacturers' products sales in August, 1949, and in July, 1953, was named to head the Cleveland district sales organization as manager.

New Distribution Cable Announced By Whitney-Blake

A NEW, COMPLETELY color-coded, 16-pair telephone distribution cable is now available from Whitney Blake Co., New Haven 14, Conn.

The cable has #19 A.W.G. soft copper conductors with polyethylene insulation and polyvinyl chloride jacket over each individual conductor. Paired conductors are cabled around a polyethylene covered, high strength steel core. Approximate outside diameter is .750".

Used in place of 16 pairs of open wire, the cable provides an economical temporary method of extending service to growing residential areas. According to the manufacturer, the cable has excellent electrical characteristics and resistance to weathering; it is light weight and easy to install; no crossarms are necessary, and it is supported by attaching the built-in messenger to the pole, making a neat inconspicuous installation and re-

Please Turn To Page 92

OGDEN W. SUTRO (left), has been advanced from sales manager, Pole Hardware Division of Malleable Iron Fittings Co., Branford, Conn., to assistant to president Mr. T. F. Hammer. ALBERT B. STEVENS (right), formerly assistant sales manager, has been named sales manager of the Pole Hardware Division

peatrophone keeps them in business . . .

24 hours a day!

What happens when a company advertises "24-hour Peatrophone order service"? Plenty. It's a phrase that has some meat in it, some meaning behind it. It gets right down to facts.

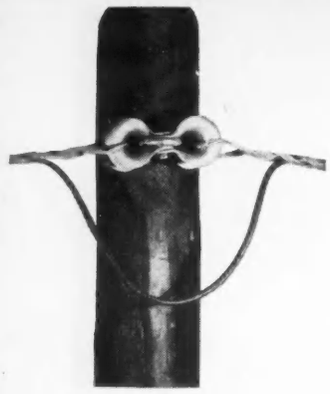
Peatrophone 24-hour order service puts the customer in the driver's seat where he likes to be. It says that you or I can get service 24 hours a day, whenever we feel like calling for it. Just that, but that's plenty! Enough to put utilities, laundries, oil dealers and service companies of all types way ahead of their competitors.

Because Peatrophone answers the problem of telephone calls during peak hours, as well as after-hours, service companies who have emergency seasons are especially interested. Call on these companies today and give them the Peatrophone formula for this outstanding "extra" service. It's low in cost for them — *it's a new source of revenue for your company.*

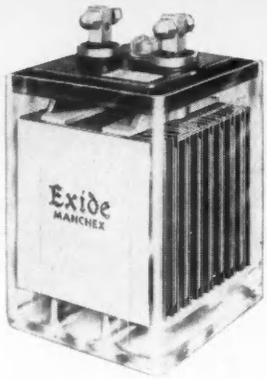
Write today for complete information and literature on Peatrophone — your new source of revenue.

Note: Selective harmonic ringing subsets now available—all frequencies

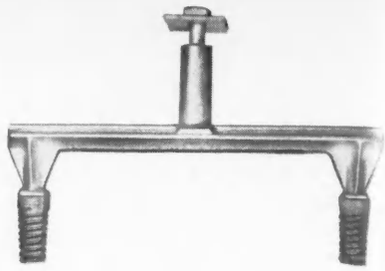
TELEPHONE ANSWERING & RECORDING CORP.
342 Madison Ave. New York 17, N. Y.



ead-Ends for Plastic Cable –Designed or thermoplastic insulation, this fit- ng protects while firmly holding ible in elongated grip in which the nit pressure is small because of large rea of gripping surface. PRE-ORMED LINE PRODUCTS CO.



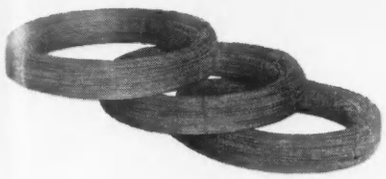
Time Proven — for 62 years, Exide Batteries have served the telephone industry. Manchester Positive plate and button type construction provide long life. Use Exide for all battery needs. Exide Indus. Div., ELECTRIC STORAGE BATTERY CO.



Help Eliminate Frequent Replacements with installation of Aluminum Transposition Brackets. Made of a new aluminum alloy, completely assembled and ready to install on crossarm —saving cost of assembly. PERMANENT MOLD FOUNDRY, INC.

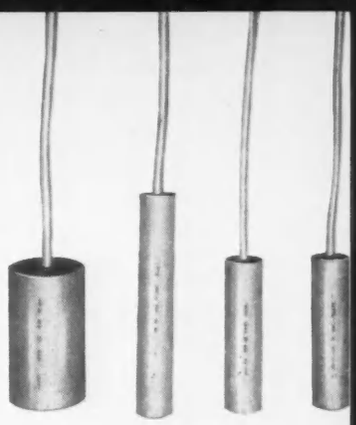
KELLOGG *for Line Supplies*

• Write, 'phone or wire all orders for Line Supplies to your nearest Kellogg Warehouse. Kellogg's stocks of guaranteed line supplies are complete--shipments are made immediately. Save time and money--send *one* order to *one* source--KELLOGG!



Save Three Ways . . . on materials, manhours, and maintenance with INDIANA STEEL & WIRE CO.'S Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, protected with heavy, ductile coating of zinc.

Superior Performance! Rely on the Ravy-O-Vac 6 telephone cells for top performance. The RAY-O-VAC CO. has perfected a specially compounded mix for telephone service which permits these cells to give lower cost per hour of telephone service.



Application of Loading Coils on tel phone circuits, reduces loss to 1/3 1/4 the non-loaded value — coi shown are used on a 2-wire telepho circuit in non-quadded paper ins lated or plastic cable. COMMUN CATION EQUIP. & ENGR.'G CO

A Tree Guard made of thermoplastic tubing, helically slit, and cut to three foot lengths — protects drop wire from abrasion where tree contacts are unavoidable. Guard can be spiraled on wire already in place. DETROIT MACOID CORPORATION.

Designed for Drainage Pumping. GORMAN-RUPP Pumps are sturdy and efficient. Ideal for use in hospital zones and residential areas. Equipped with accessories for quiet operation. Powered by 4-cycle engines — local service everywhere.

WRITE, 'PHONE OR WIRE YOUR NEXT ORDER FOR SUPPLIES TO . . .

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A Division of International Telephone and Telegraph Corporation

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

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1515 Turtle Creek Blvd.
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Mansfield 7-2816

KELLOGG Branch Offices:

406 S. Main Street
Los Angeles 13, Calif.

720 S. Washington Street
Portland 5, Oregon

(Continued From Page 88)

quiring a minimum of trimming in wooded areas. The cable is availabe from distributors of Whitney Blake products.

Hubbard Announces Sales Appointments

RICHARD G. ROBBINS, vice president and general manager of Pittsburgh and Chicago Plants of Hubbard & Co., covering the Eastern and Mid-Western territories, has announced the following promotions and appointments:

Clifford H. Keen, who has been associated with Hubbard & Co. in

C. H. KEEN

L. P. SCHAFER

various sales capacities since 1923, has been made assistant general sales manager.

Leonard P. Schafer, with the company for 29 years, has been made Southeastern sales manager. Assisting him will be: M. E. Harrison in Florida; J. H. Awtry in Alabama and Georgia; W. J. Meinert in Ohio and southeastern Michigan; W. W. Ege, Jr., in Kentucky, southwestern Ohio, southern Indiana, and central and eastern Tennessee.

John C. Carroll, Jr., 18 years with Hubbard & Co., has been appointed

J. C. CARROLL

D. V. COLE

Midwest sales manager. He will personally cover northern Illinois and will be assisted by: LeRoy A. Ehmsen in Iowa and eastern Nebraska; F. G. Lanick in North and South Dakota, Minnesota, western Wisconsin, and eastern Montana; William Calog in eastern Wisconsin and central Illinois; Roy E. Peterson in northern Indiana and Michigan.

Don V. Cole, with Hubbard for 25 years, has been appointed Southwest sales manager and will personally contact the trade in Arkansas, southern Illinois, northern Mississippi, western Tennessee, and eastern Missouri. He will be assisted by: G. T. Brundett in Texas; Earl C. Nelson in Kansas, Oklahoma, and western Missouri; James A. Wills in Louisiana and southern Mississippi; and Wallace E. Stroberg in New Mexico, Colorado, western Nebraska, and southeastern Wyoming.

Graybar Names Wallace Assistant Vice President

THE APPOINTMENT of Douglas Wallace as assistant vice president of Graybar Electric Co., Inc., New York City, effective January 1st, was announced last month by President W. E. Henges.

Mr. Wallace will work with Vice President E. W. Cashman who heads up Graybar's inside operations. Starting as an assistant accountant at Seattle in 1922, he soon transferred to New York where he rose through the positions of accountant, senior accountant, assistant secretary and assistant merchandising manager.

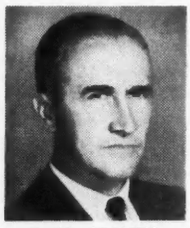
In January, 1938 he was appointed district manager at Jacksonville, returning to New York in October, 1940 as assistant general sales manager. He was general communications and merchandising sales manager from January, 1943 until nine months later when he became district manager at Pittsburgh. Mr. Wallace is on the board of directors of the company.

J. E. Carroll is replacing Mr. Wallace as Pittsburgh district manager. Mr. Carroll joined the company as a salesman at Syracuse in 1935 and became manager there in 1946. He was commercial sales manager at New York from 1949 until transferring to Cincinnati as district sales manager in 1953, which position he held at the time of his present appointment. He is a graduate of Niagara University with a B. S. degree.

Edmond H. Leavey Heads Int'l. Standard

THE ELECTION of Major General Edmond H. Leavey, U.S.A. (Retired), as president of International Standard Electric Corp., overseas manufacturing subsidiary of International Telephone and Telegraph Corp., was announced last month by William H. Harrison, president of IT&T.

General Leavey joined the IT&T November, 1952 as vice president after a distinguished military career and since June, 1953 had been president of Federal Telecommunication Laboratories, Nutley, N. J. He is also a director of various I T & T associate companies. He was born in Longview, Texas. He attended Texas Agricultural and Mechanical College for two years before entering the U. S. Military Academy at West Point, where he was commissioned a second lieutenant upon graduation in 1917. He received his civil engineering degree from Rensselaer Polytechnic Institute in 1922, and for the next four years was Assistant Professor of Military Science and Tactics at the Massachusetts Institute of Technology.



E. H. LEAVEY

He has had extensive experience in both the operational and administrative fields of engineering. He was Chief of the Logistics Division of Supreme Headquarters of the Allied Powers in Europe (SHAPE) before his retirement in 1952.

During World War II, General Leavey occupied key posts in both the European and Pacific theares.

A registered professional engineer in civil and industrial engineering, State of Texas, he is a member of the American Society of Civil Engineers, the Army and Navy Club, Washington, D. C., the Scientific Society of Sigma Xi, and Delta Tau Delta fraternity.

Bakken Named Exec. V.P. of Chase Brass & Copper

THE ELECTION of Glenn P. Bakken, Phoenix, Ariz., as a director and executive vice president of Chase Brass & Copper Co., Inc., a subsidiary of Kennecott Copper Corp., has been announced by Richard C. Diehl, president of Chase. Mr. Bakken succeeds Wallace C. Husted, who retired Sept. 1, 1954.

Mr. Bakken is a native of Minneapolis, Minn., and was graduated from the University of Minnesota in 1942 with the degree of B.S. in Mechanical Engineering. Upon graduation, he accepted a position with the Aluminum Co. of America, in Lafayette, Ind., attaining a supervisory position

in the industrial engineering and production control divisions.

In 1946 Mr. Bakken joined the Reynolds Metals Co., Grand Rapids, Mich., where he served as extrusion superintendent. In 1947 he was transferred to the Reynolds' plant in Phoenix, Ariz., as plant superintendent, and in 1950 was elevated to the position of plant manager.

Copperweld Official Heads National Assoc. of Mfgs.

HENRY G. RITER, 3RD, was elected the 1955 president of the National Association of Manufacturers last month. Prominently identified with industry and investment banking for many years, Mr. Riter is chairman of the board of directors of Copperweld Steel Co. and serves on its executive committee. He has been a director of Copperweld since 1939. Mr. Riter is president of Thomas A. Edison, Inc., and a limited partner in Riter & Co. Elected to the NAM board of directors in 1951, he served on the association's finance and industrial problems committees in 1953 and 1954.

H. G. RITER

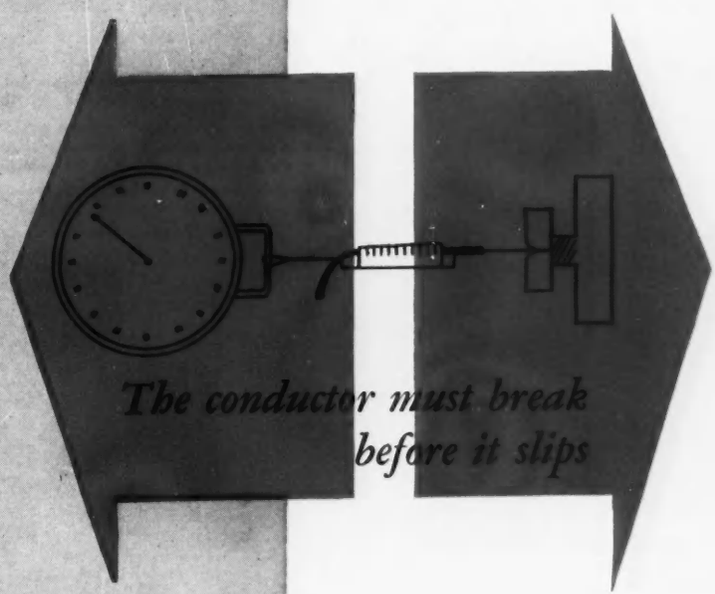
NAM's newly-elected president began his business career in 1908 at the age of 16. His first job, after graduating from Germantown Academy, was with the Philadelphia brokerage house of Chandler Brothers & Co. He was employed by investment firms until 1919, when he joined the Philadelphia staff of Dillon, Read & Co. Rising rapidly with this concern, he became a member of the firm in 1927. Later that year, at the urgent request of the late James Forrestal, then an officer of Dillon, Read & Co., Mr. Riter transferred his activities to the New York office. He remained with this firm until 1933, when he organized Riter & Co.

During his many years as an investment banker, Mr. Riter participated, as underwriter, in the financing of numerous corporations; and it was in this capacity that he initially became interested in Thomas A. Edison, Inc., which had been organized years before to produce the inventions of the famed "wizard."

Mr. Riter's company handled issuance of the Edison company's stock and following this financing, Mr.

ALPHADUCT

P clamp adhesion test



P clamps are the most widely used method of attaching drop wire to buildings. Lest you may worry about a P clamp causing slipping of the insulation or jacket on Alphaduct Neoprene Jacketed Drop Wire — read about this Alphaduct service test. This test is made daily.

A sample of Alphaduct wire is inserted in a P clamp with 12 inches of the wire projecting from the top of the clamp. The bail of the clamp is then inserted in the upper jaws of a tensile testing machine, and the end of the wire is stripped free of jacket and insulation and inserted in the other end of the machine.

The jaws of the machine are then gradually separated until the conductor breaks. The conductor must break before there is ANY slipping of either the jacket or the insulation.

Don't have any worries about a little old P clamp hurting ALPHADUCT drop wire. Try Alphaduct. It's dated by a color coded thread so you can see for yourself how long it lasts, how much money it saves.

ALPHADUCT WIRE AND CABLE COMPANY • MILLTOWN, NEW JERSEY
NATIONAL DISTRIBUTORS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS
REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA.
THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

Riter was invited to become a member of the board of directors. Later he served as chairman of the executive committee and became president of the Edison company in 1950.

He is vice president, director, and a member of the executive committee of the New Jersey State Chamber of Commerce; former governor of the Investment Bankers' Association of America; former chairman of the board of governors of the National Association of Security Dealers; and former president of the Bond Club of New York.

Graybar Names Elliston To New Position

M. A. ELLISTON has been appointed manager of the Abilene branch of the Graybar Electric Co., Dallas District Manager V. A. Elmblad has announced. This appointment became effective February 1. He succeeds L. P. Bell who retired after 39 years with the company.

Mr. Elliston joined Graybar's Dallas office in March, 1936 as truck driver. He soon advanced to warehouseman, a position from which he left Graybar for military duty, returning to Dallas as office salesman in January, 1946. A year later he became city salesman, which position he held until his new assignment. Mr. Elliston is a native of Garland, Texas.

Carl Norberg Elected Pres., Electric Storage Battery

CARL F. NORBERG was elected president of The Electric Storage Battery Co., Philadelphia, Pa., at a recent meeting of the board of directors. The action followed the resignation of S. Wyman Rolph as president, chairman of the board and a director, who is retiring after 38 years service.

Mr. Norberg joined Willard Storage Battery Co., then a subsidiary of The Electric Storage Battery Co., in 1925, shortly after he came to the United States from his native Sweden, where he graduated from University of Upsala and the School of Mines, Royal Institute of Technology. He held a succession of positions and was works manager and chief engineer of Willard Storage Battery Co. of California until 1938 when he was transferred to the executive department of Willard in Cleveland. In 1941 he became vice president in charge of manufacturing.

C. F. NORBERG

Mr. Norberg was transferred to the Electric Storage Battery Co. in 1943 and the next year was made vice president in charge of manufacturing. He was elected a director of the parent company in 1948, and in 1950 he was named executive vice president, the position he held until his election as president.

Mr. Norberg is a member of American Chemical Society, American Ordnance Association, Franklin Institute, National Association of Manufacturers, Society for the Advancement of Management, Society of Automotive Engineers and Association of American Battery Manufacturers. He also is national program chairman of American Management Association and an officer and charter member of Los Angeles Battery Club.

EXIDE ANNOUNCES WINNER OF TELEMOBILE CONTEST: — Mrs. H. B. Fine, Topeka, Kan., won first prize in the 1954 Exide Telemobile Contest conducted at the recent Chicago Convention of the United States Independent Telephone Association. Mrs. Fine received a $50 United States Savings Bond from Exide Industrial Division of The Electric Storage Battery Co., according to E. J. Fitzmaurice, sales engineering manager. The object of the contest was to guess the number of times a miniature electrically-driven telephone truck would be propelled around a track by an Exide 3-PLX-7 telephone type storage battery mounted atop the truck. Answers ranged from hundreds to millions: Mrs. Fine's answer was only 27 more revolutions than the actual count of 4,212.

Kellogg Appoints Shurtleff As Agent In Alaska

KELLOGG SWITCHBOARD & SUPPLY CO., a division of International Telephone & Telegraph Corp., announced last month that Charles H. Shurtleff had been appointed sales agent for the company's products in Fairbanks, Alaska, and areas adjacent to Fairbanks.

Mr. Shurtleff has been in Alaska since 1948 where he has been engaged in electrical, radio and electronics work for the Civil Aeronautics Administration of the U. S. Dept. of Commerce and for private companies. He is a member of the Institute of Radio Engineers and is a Civil Defense Radio Officer, 4th Judicial Division of Alaska and Civil Defense Staff Radio Officer for the Fairbanks area.

Leonard Ruggles Wins Talbott G. Martin Award

LEONARD L. RUGGLES, chief telephone engineer, Automatic Electric Co., Chicago, has been designated the 1954 recipient of the Talbot G. Martin Award. Named for a former chief engineer of the company, the Award is bestowed annually by the Strowger Automatic Club, an employe organization of Automatic Electric, to the member of the Club who is judged to have outstanding contributions to the art and science of communication.

L. L. RUGGLES

Presentation of this highly coveted honor was made at ceremonies at the December 9, 1954 meeting of the Strowger Automatic Club. The citation reads: *"To Leonard L. Ruggles, whose notable service in such fields as quality control, product design, and technical counsel has*

played a vital part in the advancement of the Strowger Automatic System."

The presentation address was made by Dr. C. M. Candy, patent attorney of Automatic Electric, who persuaded Mr. Ruggles to enter the employ of Automatic Electric in 1919. Mr. Ruggles was Dr. Candy's First Sergeant during part of World War I while both were serving in a Signal Corps training unit.

Mr. Ruggles is a graduate of Purdue University, and a Fellow of the American Institute of Electrical Engineers.

The Strowger Automatic Club gets its name from Almon Brown Strowger who devised the first automatic (dial) telephone system (Strowger system) to be used commercially.

Jack D. Bruce named Klein Sales Representative

MATHIAS KLEIN & SONS, pioneer Chicago manufacturer of tools and equipment for the electrical industry and hardware field, has announced the appointment of Jack D. Bruce as sales representative for the East Central States. Mr. Bruce's background is one of close association with electricians' tools and equipment. Before joining Mathias Klein & Sons, Mr. Bruce did circuit wiring and trouble shooting for the City of Chicago. His military background includes service as a Navy frogman.

J. D. BRUCE

Much of the territory Mr. Bruce will cover was previously serviced by the late Jack McAmis.

New Agents Appointed By Preformed Line Products Co.

PHILIP M. SCHLOSS, general sales manager of Preformed Line Products Co., Cleveland, Ohio, has announced the appointment of two new sales representatives: F. C. Clatterbaugh of Omaha, Nebr., and H. Jack Belcher & Associates of Jacksonville, Fla. In addition, the state of Virginia has been added to the territory of The Electrical Distributors Co. of Philadelphia.

F. C. Clatterbaugh graduated in

PLASTIC insulated wires within a jacket are proving to have definite electrical and economical advantages. However, this thermoplastic insulation must not be subjected to concentrated stresses. Ordinary support fittings are not suitable for this type of cable. THE ANSWER: PLP Dead-Ends and Tangent Support Line Guards used as shown above protect while firmly holding cable in an elongated grip, in which the unit pressure is small because of the large area of the gripping surface. For details of their exclusive advantages, ask your Distributor or write us for Descriptive and Technical Data.

PLP

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ACORN INSULATED WIRE

Quality WIRE for Every Telephone NEED

★ ★

DROP WIRE
BRIDLE
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INTERIOR
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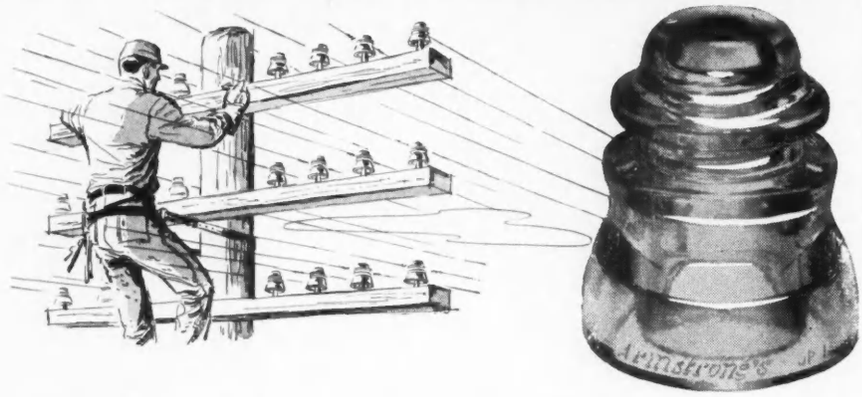
POTHEAD
CABLE TERMINAL
FIXTURE
PLASTIC INSULATED

ACORN INSULATED WIRE CO., INC.

36 Freeman St., Pawtucket, Rhode Island

NORTH ELECTRIC CO., 501 S. Market St., Galion, Ohio.

Drop Wire—Bridle—Interior—Tree—Ground—Switchboard—Pothead—Cable Terminal—Instrument—Fixture—Buried Wire



Practical Design

You'll find Armstrong Glass Insulators give long, trouble-free service. That's because wall section thickness and wire groove location are carefully calculated for maximum mechanical strength. Every detail that gives these insulators their practical design is the result of many years of experience—and this experience assures your satisfaction with Armstrong Glass Insulators. For details, write Armstrong Cork Co., Glass and Closure Div., 295 Fifth Ave., New York 16, N. Y.

Armstrong GLASS INSULATORS

for communications . . . for power

1939 from Iowa State College with a B.S. in Electrical Engineering. He is a member of AIEE, National Society of Professional Engineers, Omaha Engineers Club and Nebraska Engineering Society. He is also registered as an electrical engineer in both Iowa and Nebraska.

H. Jack Belcher & Associates is an organization of six representatives with offices in Jacksonville, Miami, Birmingham and Atlanta.

Appointed Assistant Director of Cook Research Laboratories

OTTO K. WELTIN has been appointed assistant director of Cook Research Laboratories, Skokie, Ill., a division of Cook Electric Co., Chicago 14, Ill., according to an announcement by J. Robert Downing, director of research. Mr. Wiltin joined Cook Research in 1949 as project engineer bringing the division over 20 years of both German and American experience in high frequency communications and microwave techniques. Previous to his new position he was chief of radar and communications section.

O. K. WELTIN

L. M. Berry & Co. Makes Personnel Changes

JOHN W. BERRY, general sales manager of L. M. Berry & Co., has announced the following personnel changes and appointments for the company:

W. J. McGirl has been appointed Southern sales manager of the Southern territory which comprises the states of Kentucky, Tennessee, Louisiana, Mississippi, and Alabama. Since June, 1952, he has served as division manager of the state of Louisiana. He joined the company in Oct., 1947. After producing an outstanding sales record in Alabama, he was appointed district manager in Birmingham, which position he held until April, 1951. He was then appointed division manager of the same state. The following year he became division manager of Ohio, and in June, 1953,

W. J. McGIRL

was transferred to Louisiana as division manager.

S. H. Rainey has been promoted from the Southern territory office in Louisville, as Southern sales supervisor, to general sales training supervisor in the general offices at Dayton, Ohio. After joining the company in Feb., 1946, he served in supervisory and managerial positions in Alabama, Kentucky, Louisiana, and Wisconsin. In June, 1953, he was promoted to Southern sales supervisor from Louisiana division manager.

S. H. RAINEY

Also being promoted from the field to the general office is Miss Geraldine McAlpin. As telephone sales training supervisor, she will now have her headquarters in the general offices and will head up sales training for all new telephone salesgirls. She comes from the territory office in Louisville where she has served as telephone sales instructor for the Southern territory since April, 1954.

Other promotions and appointments in the field include W. C. Welch to Kentucky division manager; M. F. Feeney to Alabama division manager; J. M. Bayley to Tennessee division manager; R. T. Davis to Pennsylvania division manager; R. H. Eshelman to Louisiana division manager; and H. L. Boebel to Tennessee division supervisor.

W. C. Welch started with the company on Nov. 12, 1950, as staff assistant in the general sales office. He was appointed division assistant of Louisiana on Jan. 1, 1953, and later, Kentucky sales training supervisor on June 1, 1954.

Before going to Alabama, M. F. Feeney had served the company only in Kentucky where he was division manager. He started in April, 1947, and was made district manager in May, 1950. He was appointed division manager of Kentucky on Oct. 28, 1953.

J. M. Bayley started with the company on Jan. 23, 1950. He served as division manager of Mississippi before coming to Birmingham as Alabama division manager.

R. H. Eshelman was hired as a salesman in Dayton, Ohio, on Aug. 15, 1947. Since then he has been in the Louisiana division where he served as district manager of Northern

Now you can end subscribers' complaints of poor voice reception, quickly and inexpensively . . . with the new Roanwell RA-1H receiver. This new element supplies almost 4 times the acoustical energy and its output is about 5 d.b. higher, over the normal speech response range, than receivers commonly in use.

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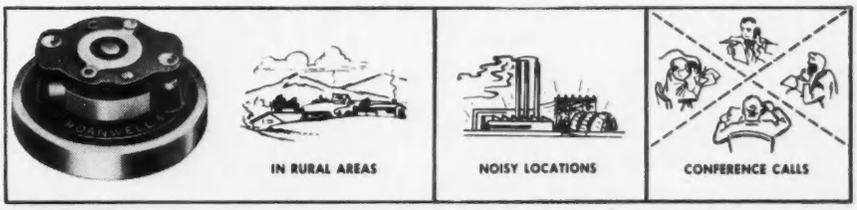

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Here's a treasury of ideas, short cuts and methods for increasing office production, cutting operating costs, and streamlining office routines. Shows how to make departmental operations more efficient and how to improve executive control. Covers all office functions, large and small — everything from improved practices of inventory control to helpful hints in typing and filing.

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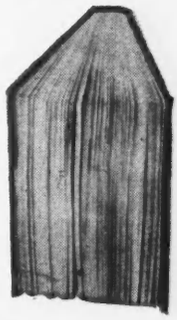

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- Birth of a cross-arm
- Money-go-round
- Tops for spinning

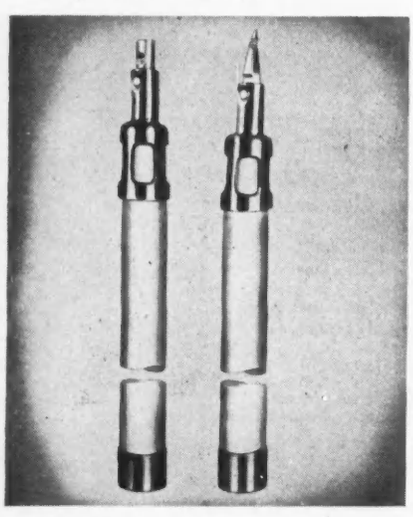
Published every month to help you get the most out of your materials and supplies dollar

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

Splinterproof pike poles last longer

Maplac*, the transparent plastic finish used on Chance Hot Line Tools, has been indorsed with popular acclaim by linemen and management alike.

And now—this tough, moisture-resistant plastic protection is being applied to Chance Pike Poles, greatly increasing their service life and adding to their safety.

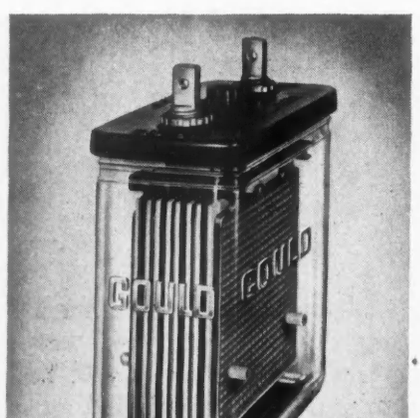


SAFETY PIKE
At left, point is reversed for safety in transporting. *At right,* pike pole is ready for business.

Splintering of the wood poles is eliminated, preventing lost time hand injuries. The durable plastic coating is available on both the reversible safety point and standard models. *Trade Name

Battery has lowest yearly cost

There's an easy way to save money on switchgear, signal and alarm systems or emergency light and power applications.



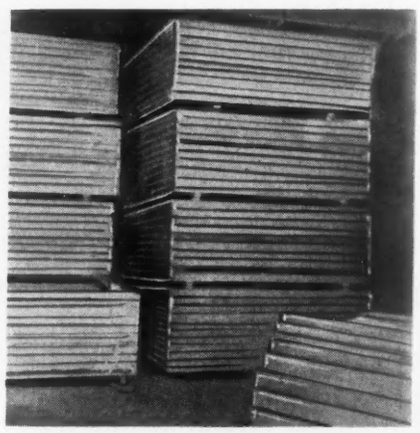
Gould Planté rolls up excellent service records—cuts maintenance to a minimum.

Amazing service records have proved that Gould Planté batteries have the lowest yearly cost of any battery you can use. Pure lead positive plates help make this possible.

For top operating economy, ask your Stromberg-Carlson representative for Gould Planté—the Aristocrat of Stationary Batteries.

Just a pile of lumber?

This is where a good cross-arm gets its start. Douglas Fir blanks, carefully chosen from select stock, are air seasoned at American Cross-Arm, Inc. to give you extra long life, resistance to stress, decay and warpage.



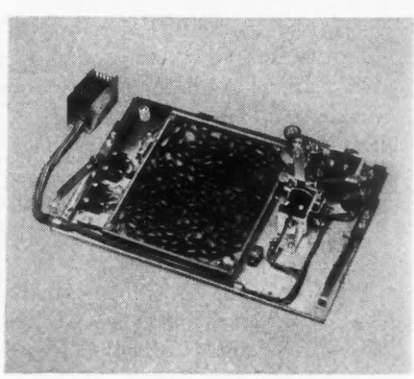
For those preferring pine, cross-arms from selected stock are seasoned and treated according to best commercial practices.

You'll never have to cross your fingers when you've got American Cross-Arm to depend on.

The money goes 'round and 'round

Yes—when the magnetic tape inside this XY® toll ticketing trunk recorder goes around inside the glass, it's making money for the exchange using it!

Completely accurate and completely unattended, the recorder "listens in" on toll calls and picks



up all the facts. Later, at a predetermined time and still without human attendance, it feeds its information into a playback which, in turn, activates printing equipment to produce either tickets or

punched cards.

If you have toll problems in your future, investigate XY toll recording right away.

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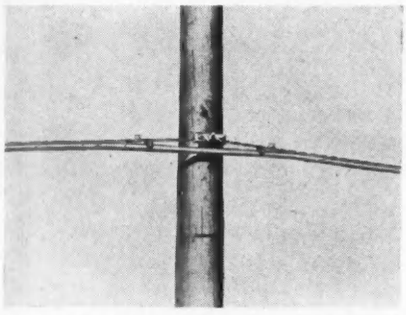
When you spin cable for suspension, the lashing wire is a key factor. That is why major telephone companies have gone to **Crapo** Corrosion-resistant Stainless Steel Lashing Wire for cable spinning. The 1200-foot coils of .045-inch diameter wire specially designed for use with modern cable lashers, make for over-all economy. Available also, in .065-inch diameter, 450- and 650-foot coil lengths.



Lashing wire for use with lead or plastic sheath cable and steel strand.

Crapo Lashing Wire comes in compact, easy-to-use thread-lay coils.

All **Crapo** Galvanized Steel Cable Lashing Wire is extra-heavy "C" coated for longer life. Furnished in .091- and .061-inch diameters.

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(Continued From Page 97)

Louisiana, and later Southern Louisiana. Before the recent appointment he was the New Orleans district manager.

R. T. Davis was hired as a salesman in Wisconsin in Aug., 1948, but was soon transferred to the Southern territory. In Dec., 1950, he was made district manager for the Chattanooga-Knoxville district.

From Jan. 5, 1948, when he started with the company, to Jan. 1, 1954, H. L. Boebel was located in the Wisconsin division. Before coming to the general offices in 1954 as general sales assistant, he was State district manager for Wisconsin.

Stromberg-Carlson Names Gleason to New Post

ROBERT C. TAIT, president of the Stromberg-Carlson Co., Rochester, N. Y., announced last month the establishment of a new group for research in the field of automation under the direction of Howard S. Gleason, who assumes the position of manager of Automation Research. The automation research group, which will become a part of the company's present Research Department, will be enlarged by personnel drawn from all divisions as needed to implement the work of the present staff of engineers.

H. S. GLEASON

The primary objective of the establishment of the Automation research group will be to consolidate Stromberg-Carlson's efforts in the complicated and rapidly expanding field of automation. Complete facilities will be provided to establish pilot lines for the assembly of components and printed wiring boards. A study of the application of the newest manufacturing techniques as applied to the Company's business will be undertaken. One of the important functions of the group will be to train development engineers in methods of design adaptable to automation and to train production personnel in the application of automation procedures to production.

Mr. Gleason and his associates will also coordinate the work now proceeding in Stromberg-Carlson's Research Department in the field of printed circuitry and other aspects of automation, and the extensive program in automatic machine tool control now going forward in the company's affiliate, Electronic Control Systems, Inc., in Los Angeles. Sidney R. Curtis, vice-president, will assist Mr. Gleason and his group in liaison with the military services, ECS, and private industry.

In his new position, Howard S. Gleason returns to the Research Department following several years of production engineering experience. Recently he has been assistant manager of production engineering for the Radio-Television Division. He is a mechanical engineering graduate from M.I.T., class of 1943, and a Marine Corps veteran of World War II.

His first assignment in the Research Department at Stromberg-Carlson in 1946 was the development of a water-tight plug and jack for the Signal Corps. This was successfully completed and is being manufactured in quantity for use by the armed forces. He has also had successful experience in the design and development of drive systems for magnetic recorders including the endless-belt recorder for the Stromberg-Carlson toll-ticketing system.

Mr. Gleason is a member of the Industrial Management Council of Rochester, the American Management Association, and is also active in the Radio-Electronics-Television Manufacturers Association (RETMA).

National Electric Products Advances David Hinton

DAVID A. HINTON has been named manager of Wire & Cable Department for National Electric Products Corp., according to an announcement made by Robert C. Bennett, Jr., vice president in charge of sales for the Pittsburgh, Pa. firm.

In his new position, Mr. Hinton will be responsible for the coordination of all wire and cable sales efforts with sales personnel and the company's design and production departments. He will also be charged with sales planning for new products introduced in National Electric's wire and cable lines.

Mr. Hinton previously had been in charge of National Electric's Under-

writers' Laboratories contacts, and had represented the firm in its technical activities with the National Electrical Manufacturers Association. A recognized authority on electrical insulations, he is the author of technical papers entitled "Applications of Electrical Insulations," and "Shielding Applications of High-Voltage Cables."

Thompson Trailer Announces New Hydraulic Derrick

A FULLY AUTOMATIC hydraulic derrick for mounting on public utility equipment has been announced by the Thompson Trailer Corp., P. O. Box 356 (TEM), Pikesville 8, Md.

According to the manufacturer, the fully automatic derrick handles loads up to 12,000 pounds through a 200° working arc. There is no center leg to take up body space and no manual adjustments to be made to operate the derrick.

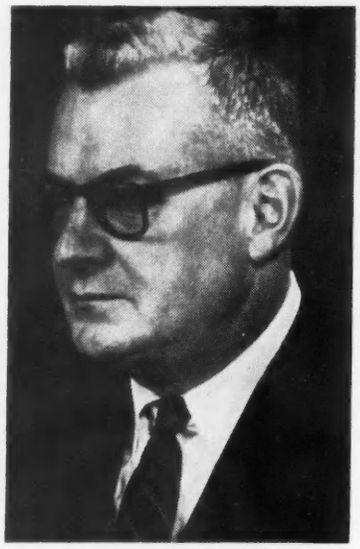
Loads of up to 6,000 pounds can be loaded automatically into or out of a truck, utility poles up to 75′ can be erected; and a wide variety of heavy objects such as large pipes, heavy castings, transformers, cable reels and other bulky materials can be readily handled automatically.

North Electric Opens New Supply Warehouse

THE ADDITION of 20,000 square feet of warehousing space for telephone supplies marked the opening of the new year for The North Electric Manufacturing Co., Galion, Ohio.

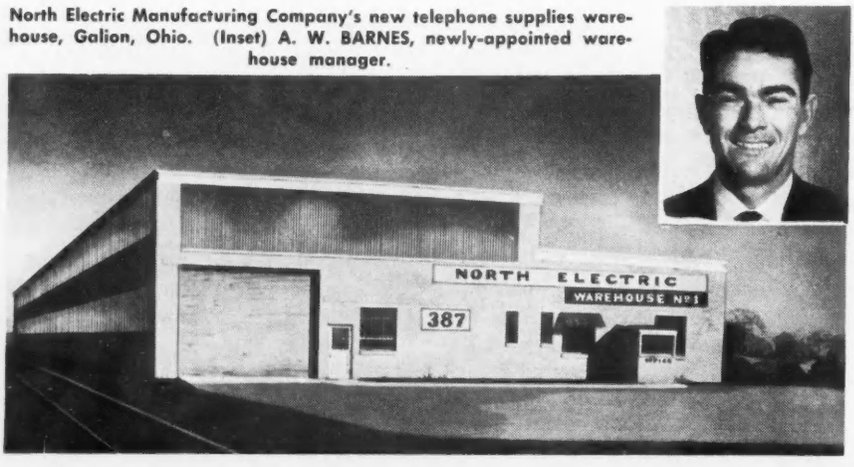
The large new structure, located at 387 South Market St., Galion, will warehouse a complete line of cable and telephone supplies and enable the company to handle customer orders, directly through offices maintained at the warehouse under supervision of A. W. Barnes, newly appointed warehouse manager.

The modern concrete block and steel warehouse is centrally located for servicing Northeastern and Central United States. A spur, fed by both the Erie and New York Central Railroads ends at internal loading docks where electric overhead hoists running the entire length of the building will quickly load or unload freight shipments. Two outside truck docks complete the modern new and efficient warehousing facilities and, according to a company spokesman, are a part of planned improvement of service for customers.



North Electric Manufacturing Co., Galion, Ohio, has announced the appointment of *E. W. MATHEWS, JR.* as controller of the company. This appointment was necessitated by the continuing expansion program undertaken at North. Mr. Mathews came to North from the Round Chain Co., Cleveland, Ohio, where he was vice-president — finance. He attended Ohio State University, is married and has one son presently enrolled in Ohio Wesleyan University.

North Electric Manufacturing Company's new telephone supplies warehouse, Galion, Ohio. (Inset) A. W. BARNES, newly-appointed warehouse manager.



M. J. Chesmar Retires from Hubbard & Co.

MICHAEL J. CHESMAR, secretary and treasurer of Hubbard & Co., Pittsburgh, Pa., retired after 38 years' service. Mr. Chesmar joined Hubbard as a posting clerk and advanced through various financial posts. He was appointed secretary-treasurer in 1944 and has been a Hubbard director since 1947. Hubbard operates plants in Pittsburgh, Pa., Oakland, Calif., and Chicago.

Mr. Chesmar is a past president of the Credit Association of Western Pennsylvania and had served on the board of directors of the National Association of Credit Men. He is a member of the Pittsburgh Athletic Club, and the Pittsburgh Field Club. He lives at 1924 Mount Royal Boulevard in Glenshaw, Pa.

General Cable Retains Dan Seitz As Consultant

GENERAL CABLE CORP. has announced that it has retained Danel S. Seitz as a full time telephone cable consultant. Mr. Seitz, who recently retired as plant superintendent of the York (Pa.) Telephone & Telegraph Co. following 50 years' service with that company, is well known as a foremost authority on cable installation and maintenance throughout the telephone industry. He has written a series of articles on the subject for *Telephony*, and has served on the Plant Committee of the United States for several years. He was the 1953-54 Independent Telephone Association Chairman of the latter committee. In addition, he has given talks on cable at many of the state telephone conventions.

His articles have been reprinted under one cover, entitled "Cable — Modern Methods of Fault Location, Installation and Splicing" and several thousand copies have been ordered by operating telephone companies in the United States and abroad.

He joined the York Telephone & Telegraph Co. in 1904 and in 1908 assumed responsibility for all construction and maintenance. In 1920 he became cable superintendent and held that post until elevated to plant superintendent some years ago.

In his new capacity with General Cable Corp., Mr. Seitz will serve as a consultant on problems associated with design and application on a wide range of telephone wire and cables

for toll and exchange use such as paper lead cable, thermoplastic cable, rural distribution cable, drop wire, inside telephone wire, terminating and switchboard cables, and other telephone products manufactured by General Cable at its various plants located at Perth Amboy, N. J., Bayonne, N. J., and Emeryville, California and distributed through Automatic Electric Sales Corp. and Leich Sales Corp. Mr. Seitz's business address will be General Cable Corp., Sales Engineering Department, Perth Amboy, N. J.

New Location For Ritter Sales Co.

RITTER SALES COMPANY, for over 20 years Raytheon's representative in the midwest telephone field, moved February 1 to its new location, 5839 W. Montrose Ave., Chicago 34, Ill. The company's old address was 612 N. Michigan Ave., Chicago.

Whitney Blake Expands Its Line of Aerial Cable

WHITNEY BLAKE CO., New Haven 14, Conn., has expanded its line of TELECABLE® Exchange Area Cable for aerial and duct use to include 76, 101, 152, and 202 pair in conductor sizes #24, #22 and #19 A.W.G.

This cable has polyethylene insulation and specially compounded weather resistant black polyethylene jacket. It has excellent electrical characteristics and long life. It is approved by REA.

With the addition of these new cables, the company now offers a complete line of wire and cable to meet all outside and inside telephone plant needs.

Ralph Maddox Named To New Position

RALPH G. MADDOX, formerly technical service manager, has been appointed vice president in charge of technical sales and services by the board of directors of Prodelin Inc., designers and manufacturers of television and microwave antenna system facilities, with general office, plant and laboratories located in Kearny, N. J.

R. L. MADDOX

In 1923, following his attendance

Why Pay 3 MEN to Watch Your Line Crew Work?

START SAVING TIME and MONEY with

TEL-E-LECT 2-MAN UTILITY RIGS

If you're using 5-man crews and old fashioned utility equipment (even on '55 chassis) you've got *three extra men on most jobs!*

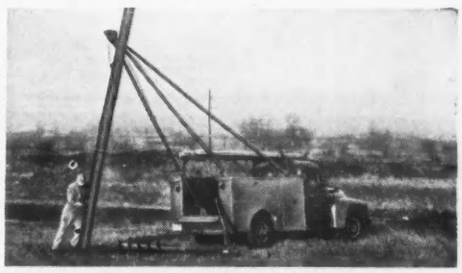
With Tel-E-Lect equipped trucks you'll discover the great time and money saving advantages of 2-man construction trucks. Leading public utility companies throughout the country are now using 2-man trucks to do a large share of the work once performed by 5-man crews—and they're realizing increased profits in the process.

Your 2-man crew won't work any harder, but they'll produce more and do it faster than many 5-man crews. You see, Tel-E-Lect builds the services of three men into its utility truck equipment. Tel-E-Lect equipment provides new power features that require only two men to perform the tasks once done by five!

The 2-man construction equipment described here lets you put smaller crews on everyday jobs while freeing big crews and big equipment for the really tough highline jobs.

THE TEL-E-LECT COMBINATION BODY

This *complete* package consists of a rugged steel body, stowaway derrick, winch and drive, pole hole digger and drive and rapid forward-reverse transmission. Three simple installation steps by your local mechanic puts the Combination Body on your truck chassis regardless of make or model. You simply install power take-off . . . mount body and connect power drive . . . and install cab controls. It's now ready to go to work!



A Tel-E-Lect all steel Combination Body is completely equipped with Stowaway derrick, digger and power units—a model 2-man construction truck.

Front mounted Tel-E-Lect "T" frame derrick and Tel-E-Lect Pole Hole Digger gives this utility truck 2-man versatility.

WINCH, DIGGER AND DRIVE KITS FOR ALL POPULAR-MAKE TRUCKS

A series of easily installed Tel-E-Lect kits make it possible to install derricks, diggers and power drives at the front of your present utility truck. The flexibility and economy of 2-man operation can be extended to any size or model of International 4x4, Ford, Chevrolet, GMC, Dodge or other truck.

These Tel-E-Lect kits are designed specifically for the particular truck on which they will be installed. Each kit contains every part needed for easy installation by your local mechanic.

TEL-E-LECT SELF-STORING DERRICK CONVERSION KITS

An entirely new concept of derrick storage eliminates the hazards once involved in derrick erection and take-down. Your front mounted "A" or "T" frame derrick stores on top of the truck—doesn't use valuable body space for storage.

Your truck's winch supplies power to raise or lower derrick. With a double drum winch you'll get "live-boom" flexibility and with a single drum winch you'll get easily adjustable derrick elevation! This low cost unit fits any truck with or without body and is quickly installed.

This 2-man construction truck features a front mounted Tel-E-Lect T-45 derrick and Tel-E-Lect Self Storing Derrick Conversion. The derrick is shown in its stored position in the smaller photo.

Tel-E-Lect provides other kits for individual requirements. Write us about any of your utility truck problems.

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at Gustafus Adolphus College, Mr. Maddox was engaged in the installation of the first radio arc transmitters used aboard U. S. Navy vessels operating in the Asiatic Fleet. In 1925 he returned to the U.S.A. to work as a field engineer for the R.C.A. Radiola Division which he left later to organize and operate his own broadcasting station KFWH.

In 1930 he joined the Telephone Equipment & Engineering Co., San Francisco, working on ship-to-shore radio communication problems. During World War II he was assigned to the engineering staff of the Signal Corps General Development Laboratories at Fort Monmouth, N. J., in charge of the Systems Engineering Branch, coordinating the Army's pulse modulated microwave radio relay system. In 1944 at the Federal Telephone & Radio Co., Clifton, N. J., he further developed telephone carrier and multi-channel radio relay systems for adaptation to commercial application and as Systems Development Engineer he planned and supervised the first commercial installations of telephone microwave relay systems which have since been established in many other services throughout the country.

Since coming to Prodelin, Mr. Maddox has continued to pioneer the first operating UHF television stations installations to use high power waveguide as well as to promote the expansion and use of VHF-TV Broadcast and Microwave Antenna Systems manufactured by Prodelin.

Mr. Maddox is a member of the Institute of Radio Engineers and actively participates in the standardization work of the Radio-Electronics-Television Manufacturers' Association.

Winslow Co. Appoints California Representative

Louis J. Winslow, president of The Winslow Co., Newark, N. J., manufacturers of electrical instruments and test equipment, has announced the appointment of The A. W. Nash Co., Los Angeles, Calif., as sales representatives for Southern California.

The A. W. Nash Co. is composed of field engineers and was founded in 1945. It has served a variety of firms, principally in the aircraft and metal industries.

The appointment will expedite the

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handling of inquiries and orders through a customer service organization which is both ideally located and well staffed.

John Wennogle Named to New Post

JOHN E. WENNOGLE, New England district manager for Hubbard & Co., manufacturers of pole line hardware, has been promoted to division sales manager for the New York area, covering New York and New England and parts of New Jersey. His headquarters will be at the Hubbard & Co. New York City office.

Mr. Wennogle joined the company in 1934 and had 10 years mill production experience and five years

J. E. WENNOGLE

J. J. McQUEENEY

sales experience in the Pittsburgh area before being assigned to the New England territory in 1949.

His former territory of New England, which is still under his supervision, will be taken over by John J. McQueeney, who is known in the area through previous employment with the General Electric Co., Appleton Electric Co., and the Vermont Hardware Co. Mr. McQueeney's territory covers all of New England except Connecticut, with headquarters in Boston.

New Bulletin Issued By Tel-E-Lect Products

A NEW 6-PAGE abbreviated catalog-bulletin describes and illustrates the complete line of public utility truck equipment manufactured by Tel-E-Lect Products, Inc., 10,001 Minnetonka Blvd., Minneapolis 16, Minn.

The Tel-E-Lect line, described in the bulletin includes: all steel utility truck bodies; self storing dericks; winches; truck powered pole hole diggers; single-lever, non-clutching transmissions; power take-offs; pole trailers; ground rod drivers and special truck equipment.

The firm's automatic equipment makes it possible for 2-man crews to perform tasks that ordinarily would require a 5-man crew. Any standard truck can be converted to a complete pole setting rig with Tel-E-Lect equipment. Ask for Bulletin No. 617.

KARL M. KLINE has been appointed to the new position of manager of railroad & telephone sales with headquarters at the Line Material Co. main office in Milwaukee, Wis. According to E. W. Williams, sales manager, Kline has been manager of railroad sales and his responsibilities have been extended to include telephone sales. Kline joined L-M in 1917 when, as a salesman, he covered the southwestern part of the country. Later he transferred to the New York district, where he served as district manager. Upon his return to the main office a few years later, he became assistant to the vice president in charge of sales. Since then, he has held other responsible positions in the sales department of Line Material Co.

H. H. Buggie, Inc., Appoints Regional Sales Managers

TWO REGIONAL Sales Managers have been appointed by H. H. Buggie, Inc., Toledo, Ohio, in a move by the company to augment customer service and sales facilities. The Eastern Sales Division is under the direction of H. K. Weast, and the Western Sales Division under the direction of F. L. Cahill. Both regional sales managers will headquarter at factory offices in Toledo.

The Eastern Division includes sales areas with headquarters in Baltimore; Boston; Chatham, N. J.; Chicago; Cleveland; Dayton; Fayettville, N. Y.; Milford, Conn.; New York City; Philadelphia; Pittsburgh; and South Whitley, Ind.

The Western Division includes sales areas with headquarters in Atlanta; Beverly Hills, San Diego and San Francisco; Dallas; Denver; Des Moines; Kansas City; Minneapolis; New Orleans; and Seattle.

H. H. Buggie, Inc., has, during the past year, introduced a number of new products, and others are to be announced after the first of the coming year. The new plan will provide the necessary close contact between the factory and each sales representative in the introduction of products and servicing of customer needs in aircraft, radio, television, and communications industries.

Free Layout Service For Shelving Customers

EQUIPTO DIVISION of Aurora Equipment Co., Aurora, Ill., for 45 years a leading supplier of steel shelving, parts bins, steel benches, trucks, drawer units, and lockers, now offers you the free services of factory trained engineers who are specialists in stockroom layouts.

In addition to this service, Equipto has also printed a simplified booklet entitled "HOW TO SOLVE YOUR STORAGE PROBLEMS" which tells the reader how to set up his own facilities, make surveys, elevation drawings, and floor plans. This is ideal for smaller layouts where the services of layout specialists are not required.

For free layout service, or additional details write Equipto Division of Aurora Equipment Company, 100 Prairie Ave., (Dept. TEM), Aurora, Ill.

JOHN W. KELLY, for the last eight years electronics engineer in the radar and communications section of Cook Research Laboratories, Skokie, Ill., Division of Cook Electric Co., Chicago 14, Ill., has been named chief Engineer in this section.

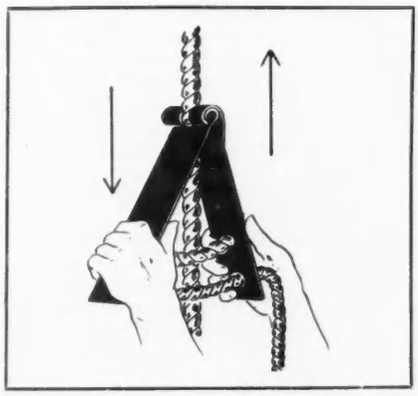
CLEARING ATTACHMENT: — The Homelite Corp. has announced a new, low-cost attachment that converts the Homelite Model 17 Chain Saw into an all-purpose clearing unit.

Exclusive with Homelite, the new Clearing Attachment is said to be ideal for land clearing contractors, road crews, pipe line companies, and railroads and utilities. Simple to operate, the power and versatility of this new Clearing Attachment permits one man to do the work of a whole gang of men using saws and axes.

According to the company's field reports, "On job after job, records prove that ONE MAN with this Homelite Attachment keeps three men busy clearing up limbs and piling brush. In most cases," the company states, "you can save enough money on the very first day to pay for the attachment!"

Designed for faster, easier, more profitable clearing, the new attachment eliminates stoop and squat in felling; lets you reach out to the limb without having to go underneath; takes the backache out of bucking and underbucking. Jaw-grip spike permits plunge-bucking of logs right on the ground. Spike bites into the dirt, keeps chain up out of the dirt; spike takes thrust of the chain, prevents logs from rolling or spinning away.

For complete information on this new Clearing Attachment, write: Homelite Corp., 48 Riverdale Avenue, (Dept. TEM), Port Chester, N. Y., or Check New Product 651.



"SAFE-HI ROPE GRAB":—A new safety device for men who work in high places has been developed and placed on the market by Clarence Rose, president of the Rose Manufacturing Co., Dept. TEM, 2700 W. Barberry Place, Denver, Colo. The product known as the "Safe-Hi Rope Grab," can be used in any situation where a verticle rope can be hung through the working area. It is a convenient metal gripping device which attaches instantly around any ¾" manila rope. Its special design acts to absorb the shock of a fall, yet in no way will it weaken itself or the life line on which it is attached.

The grip is secured by detaching the two metal strips from each other at the top and curved joints, allowing the rope to be slipped between the strips into the rope hole provided, and reattaching the strips at the joints. The rope grab can also be moved up or down by this easy method.

The Safe-Hi Rope Grab cannot be knocked off accidentally. Its light weight features (2½# including lifeline and belt) make it easy to use, and its extremely high safety factor will greatly reduce injury or death in the event of a fall. The Safe-Hi Rope Grab is especially practical and safe for men who work on scaffolding, swinging stages, structural steel, bridge building and in every other type of work where men are exposed to the hazards of falls. For further information, Check New Product 652.

NEW PRODUCTS' SHOWCASE

For complete data on New Products and Services described in this department, fill in Coupon on page 107.

AERIAL PLATFORM:—Special operating and safety features are incorporated in a hydraulically-operated aerial platform being introduced by Pitman Manufacturing Co., 300 W. 79th Terrace, Room 604, Kansas City 14, Mo.

Electrical construction, tree trimming, overhead construction and maintenance, are a few of the jobs which the manufacturer says the "Giraffe" will enable workmen to do in just a fraction of the time now required by most methods.

Operated by its own independent power source, the unit is sold as a completely self-contained unit that can be easily installed on a truck in a matter of hours. Factory installation is not required.

With a two-section boom that can put a workman 40-feet into the air, the "Giraffe" can handle up to 450 pounds at any radius with no outriggers. It can handle 1000 pounds at any radius with outriggers. The boom of the "Giraffe" can be rotated continously in either direction and its two sections can be moved up or down independently or at the same time, affording almost unlimited versatility of movement.

The "Giraffe" has been designed to meet the most rigid safety standards, Pitman officials say. Insulation is provided to protect the upper end of the boom and platform against 7500 volts. In actual tests, the insulation has withstood up to 30,000 volts. Seamless steel tubing has been used almost exclusively in place of hose to carry hydraulic fluid. Even so, if a break should occur in a hydraulic line there are restrictors in the system which lower the boom at a controlled rate of speed.

The "Giraffe" also features foot-operated controls on the working platform. This means that the operator's hands are always free for work.

A counterweight and a hydraulically-operated device which locks out the truck springs make it possible for the "Giraffe" to handle two average-size men and tools, without outriggers. This means the truck "Giraffe" is mounted on can be moved with workmen aloft. Capacity figures allow an adequate safety margin.

The same power source used for Giraffe also can be used to operate a compressor or generator, making possible economical use of the wide range of power tools available for overhead work. As standard equipment at no extra cost, there is a pipe inside the boom of Giraffe for transmitting air power to the platform, also a tube to serve as an electrical conduit.

Pitman also manufactures the Pitman Hydra-Lift and Pitman Crane, Model 80, 3 and 4-ton truck mounted cranes sold by construction equipment distributors throughout the United States. For additional information write Pitman Manufacturing Co., Rm. 604, 300 W. 79th Terrace, Kansas City 14, Mo., or Check New Product 653.

SAFETY LETTERS: — A new indestructible, green plastic box with transparent top will now be furnished with standard sizes of Mecco Safety Letters and Figures, ¼" size and smaller.

Transparent lid enables contents of box to be checked without removing lid which will facilitate receiving departments in checking size and contents.

Shipping charges will be reduced due to lighter weight, as compared to the wooden boxes. Also, overall sizes of boxes are about 25% to 35% smaller than the old boxes.

These new boxes are made from acetate

Continued on Next Page

New Products' Showcase

(Continued From Page 105)

butyrate to provide maximum strength. Due to the strength of this material, protective wrapping can be reduced to minimum. Lid is transparent light green and base of box is dark opaque green.

Holes in boxes are square which maintains stamps in proper position to facilitate production stamping. All boxes are furnished with metallized embossed labels which identify contents as to size and style.

These new plastic boxes will be furnished with Hevi-Bevl, Wedge-Grip, Nu-Grip and other styles of Mecco Safety Letters and Figures as detailed in Bulletin 104. Copies of this bulletin may be obtained from M. E. Cunningham Company, 1095 Chateau Street, Pittsburgh 33, Pa., or by Checking New Product 654.

JACK ATTACHMENT: — Any two wheels of a car — front, back or side, can be jacked up simultaneously by bumper or frame with the Naf-Lo Hy-lift, a new, inexpensive floor jack attachment. Clamped on to any type of jack in 30 seconds, the Hy-lift performs many jobs that formerly could be done only with more expensive hoists.

The Hy-lift was designed by the manufacturer to fill a long-standing need for an attachment which would successfully convert any floor jack into a unit giving more versatile performance than just the jack itself.

Any automobile wheel, brake or tire job, as well as other services, can be done more easily and safely with the Hy-lift.

Ability of the attachment to safely raise two wheels at once solves many problems encountered in specialized services such as tire switching, wheel service, checking brakes, body work, lubrication, spring service, wheel balancing, washing, tire-chain installation — any service work where chassis or body parts must be free and accessible.

By adding an additional 11 inches of hoisting height to any floor jack, the Hy-lift helps solve the irritating problem of deep fender skirts. It also meets the objections of car manufacturers to "one-point" hoisting, with possible car frame damage.

The Naf-Lo Company announces that its new Hy-lift not only meets the need for a "two-wheels-at-a-time" hoist, but also overcomes objections of purchasing a high-cost unit to do the same work, which the Hy-lift and any existing floor jack deliver for an outlay to the operator of only $34.95. It not only saves time and money, but permits considerable expansion of work in any auto servicing establishment.

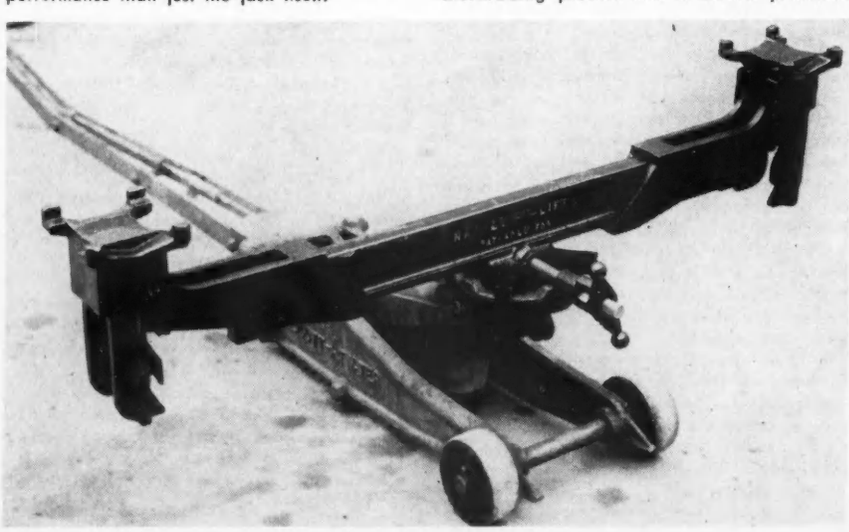
For more information or descriptive folder illustrated with photos of the Hy-lift in actual use, write the Naf-Lo Co., 3338 Hennepin Ave., Minneapolis 8, Min., or Check New Product 655.

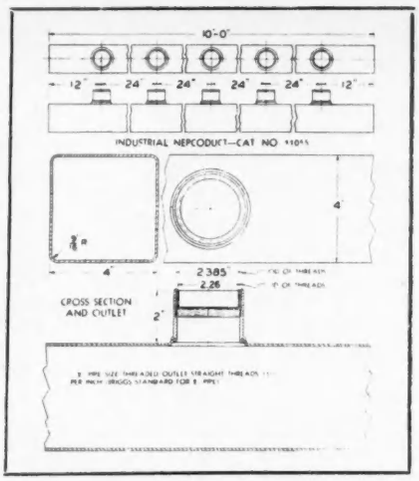
RACEWAY: — A new industrial type of Nepcoduct underfloor electrical raceway, with more than three times the capacity of standard underfloor duct, has been announced by National Electric Products Corp., Gateway Center, Pittsburgh, Pa.

A rugged, 14-gauge cold rolled steel raceway with a 4-inch by 4-inch cross section, Industrial Nepcoduct is designed for heavy-duty wiring in industrial plants where overhead wiring would interfere with normal operations.

The new Nepcoduct's greater capacity allows a flexibility in plant layout which is not possible with the lesser capacity of standard underfloor raceways. Electrical installations which utilize such an extensive distribution system permit an almost infinite variety of machinery emplacements, since all areas are adequately served by electrical outlets.

Industrial Nepcoduct is galvanized by the sherardizing process and is further protected





with an acid-resistant clear enamel on interior and exterior surfaces.

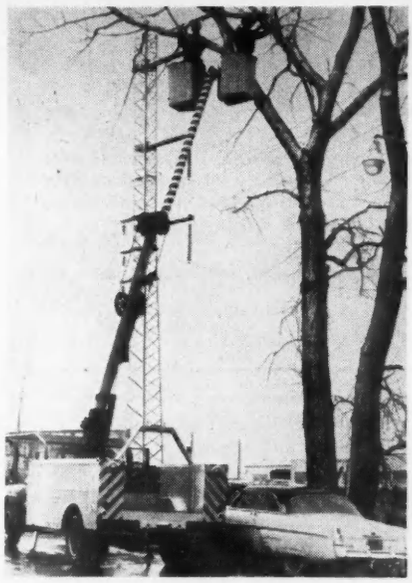
The new product is furnished in standard 10-foot lengths and provides two-inch pipe size, threaded outlets on 24-inch centers permitting the direct insertion of conduit for standpipe service fittings. Complete with junction boxes and a full complement of fittings, Industrial Nepcoduct is a fully grounded, industrial underfloor wiring system, and is listed by Underwriters' Laboratories, Incorporated. —For complete data, Check New Product 656.

PHOTO PANELS: — Acme Photo Panels make it easy to prepare lists — prices, parts, personnel, catalogs and directories — for reproduction by photographic processes. Ideal for lists which must be distributed in quantities and require frequent changes. Panels come in various sizes, with runways to accommodate from one to four columns of cards. Descriptive, illustrated literature and samples of lists, catalogs, etc. which have been reproduced from Photo Panels are available from Acme Visible Records, Inc., Crozet, Va.—Check New Product 657.

AERIAL BEAM: — McCabe-Powers Auto Body Co., St. Louis, Mo., has announced an addition to its Powers-American line of truck-mounted aerial equipment.

The new unit, known as the "Sky-Master" Hydraulic Aerial Beam, consists of a revolving mast and a pair of hydraulically-actuated beams, constructed to carry two men up, out, over, or down to an unlimited number of positions within the operating range.

Supporting mast, which rotates on roller bearings, can be revolved continuously in either direction. Inner beam can be moved to any point in an 85 degree arc. Outer beam, moved hydraulically in combination with drive pulleys and ¾ inch wire rope, can be spotted in any position within an operating



arc of approximately 265 degrees. Movement of the mast and each beam is controlled by independent levers installed beside twin work baskets connected to the outer beam.

The work baskets can be moved around obstacl s to reach any working position in the range of movement. By means of a parallel linkage, the basket floors remain in a horizontal position at all times.

Sky-Master can be furnished in two sizes, installed on a Powers-American Body or on a unit designed to fit individual work requirements. Series AB-37, having a maximum ground-to-basket floor height of 37 feet, enables two men to reach working areas 42 feet above the ground. Series AB-43 has a maximum ground-to-basket floor height of 43 feet — providing a comfortable working height of 48 feet.

Construction features include insulation against 50,000 volts; automatic locking in any position to which the unit is moved; hydraulic outriggers, on each side of body, for absolute stabili'y; constant oil flow in cylinders to assure safe operation at all times; and relief valves to prevent overloading. Optional items include engine-driven air compressor and air receiver, with air lines to outlets at the work baskets; expanded metal cab protector on steel frame; and dual controls installed on the mast for operation from the ground.

Construction, operation, and safety features are described in Powers-American Bulletin #410. A copy, with price information, may be obtained from McCabe-Powers Auto Body Co., 5900 North Broadway, Dept. TEM, St. Louis 15, Mo., or by Checking New Product 658.

SOLDIERING IRON: — The Vulcan Electric Co., Danvers, Mass., has announced a new soldering iron, catalog number 450, designed for use on fast production lines.

Rated 150 watts, with ⅜" diameter plug type tip, the No. 450 builds rapidly to operating temperatures, which are held during continuous production soldering.

Only 12⅜" overall (including tip) the distance between hand and work is reduced and unusual fatigue-resistant balance is provided. A special double baffle helps maintain comfortable handle temperatures. Hardwood handles are flared for optimum grip, while protecting the fingers from contact with hot portions of the tool. Available in standard voltages.

New high speed models are also available in 200 watts, with either ⅜" or ½" diameter tips.—For complete data, Check New Product 659.

THE BUYERS' GUIDE

ADVERTISING, Directories — *Planning, Selling, Compiling, Producing, Publishing and Distributing — backed up with over 43 years of Directory Experience and Knowledge. Write or call L. M. Berry & Co., Hulman Bldg., Dayton, Ohio.*—[ADV. 1]

ADVERTISING, Directories — *General Telephone Directory Co., 604 Pine Ave., Long Beach, Calif., and 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 2]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 3]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. *Klein & Sons, Mathias. 3200 Belmont Ave., Chicago 18, Ill.*—[ADV. 4]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 5]

BRUSH & WEED KILLERS — *Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.*—[ADV. 6]

CABLE, All Plastic, *Aerial, Duct, Direct Burial, PBX, Switchboard.* — *The Ansonia Wire & Cable Co., Ansonia, Conn.*—[ADV. 7]

CLIP — Modern Lineman's Needle Clip. Free catalog #AA588 and free samples from. *Mueller Electric Co., 1588AA E. 31st St., Cleveland 14, Ohio.*—[ADV. 8]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 9]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 10]

ELECTRIC HOT WATER HEATERS. *Thermostatically controlled for any hot water heater. Vulcan Electric Co., Danvers 17, Mass.*—[ADV. 11]

FURNACES — For quickly and economically melting lead and paraffin — *Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.*—[ADV. 12]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 13]

LIGHTWEIGHT PULLERS — *Coffing Hoist Compan, 800 Walters St., Danville 5, Ill.* —[ADV. 14]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 15]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.* —[ADV. 16]

POLES, Southern Yellow Pine — *Colfax Lumber & Creosoting Co., Inc., P. O. Box 23. Pineville, La.*—[ADV. 17]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.*—[ADV. 18]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 19]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 20]

REBUILT TELEPHONE & SWITCHBOARDS — *Telephone Repair & Supply Comoanv, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 21]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 22]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., Milltown, N. J.*—[ADV. 23]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 24]

WIRE, Telephone, *for all inside and outside uses* — *Whitney Blake Co., New Haven, Conn.*—[ADV. 25]

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POSITION WANTED: — Position as manager in progressive class A company desired by graduate engineer with 14 years in telephone field. Have administrative ability and experience in plant operations, engineering, accounting, traffic, and dial conversion programs. Write Box No. 8937, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.

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HELP WANTED: — Chief Operator. Permanent position, must be thoroughly experienced in all phases of manual and toll dial operation. Must have ability to select new employes and to supervise training. Excellent working conditions, salary commensurate with experience. Class A Telephone Company. Write Box No. 8920, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.

HELP WANTED: — MANAGER for rapidly expanding commercial (cooperative) Rural Telephone System located in Bemidji, Minnesota. Must have administrative ability to achieve and maintain efficient operations and develop sound expansion programs. Ability to hire, train and direct personnel in all phases of telephone operations. Technical, plant and commercial knowledge and experience desired. Permanent position carrying substantial opportunity for qualified person. Replies confidential. Please write Mr. E. H. Larson, Manager, Beltrami Electric Cooperative, Inc., Bemidji, Minnesota.

HELP WANTED: — Young man to fill a good position. Experience in plant, design, commercial and tariff is preferable. State qualifications, references, and experience in first letter. Write Box No. 8934, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago 26, Ill.

CABLE SPLICERS, Equipment Installers, Station Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 6100 N. 20th, Philadelphia, Pennsylvania.

HELP WANTED: — Central Office Switchman wanted by Independent Telephone Company. Must be experienced in repair and installation of dial and common battery equipment. One of the Largest Independent Telephone Companies in the United States. Located in Southern Ohio. Sickness, retirement benefits, hospitalization and group insurance. Wages cemmensurate with experience. Give full details of experience. Write Box No. 8935, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago 26, Ill.

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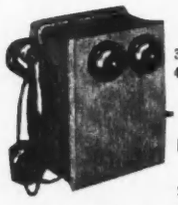

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Model #30- Case C. 20 Volts-60 Cy. @ $20.00
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Prices are F.O.B. Chicago

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SPECIFY **TELERING** for

Dependable and Economical Telephone Ringing Power Equipment.
Engineered for complete satisfaction.

Manufactured by

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NEW, Surplus Cable Splicers Oak Platforms, size 38" x 54" complete with eye bolts and guy lines.

SPECIAL PRICE—while they last—$14.00 each

NEW: Splicers tent bows complete with all hardware, less canvas $4.00 each.

BOHNSACK EQUIPMENT CO.,
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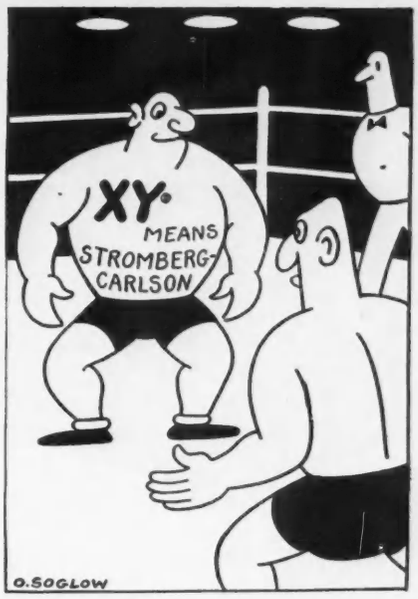

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Creosoted Southern Yellow Pine Poles. Treating Plant, Augusta, Georgia.

FOR MAGNETO SWITCHBOARDS

W. E. #22-C Combined Jacks and Signals on #89-B Mounting (5 per strip) *NEW*
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Federal #804-A Magneto Handsets for Desk or Wall Mounting—*RECONDITIONED*

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Rebuilt, Refinished
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MODERN PHYSICS for the ENGINEER

Edited by **Louis N. Ridenour**, Vice-President, International Telemeter Corp.; Visiting Professor of Engineering, University of California, Los Angeles
490 pages, 6 x 9.
211 illustrations.
$7.50

JUST OUT!

In this book, nineteen eminent scientists explore with you advances in basic physical sciences on which tomorrow's engineering is being built. Written for engineers especially, the book shows significant developments and achievements in various sciences out of which new engineering applications will grow.

The book looks at the interior of an atom and the forces holding it together . . . at the world we live in, and the world we cannot see beneath the oceans and the crust of the earth. The outlines of sciences that study the smallest atomic particles and those that examine the vastness of galaxies are presented by men well known in their fields.

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Write Today for Your Copy..

Bashlin's new bulletin giving full details on Linemen's Safety Equipment is ready for you . . . a complete line from which to choose, and every one a champion. Write today!

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Showing the up-right cloth in action.

Formed-flexible finishing cloths (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or imported English MOLESKIN. If your jobber cannot suppy you write us for literature and prices.

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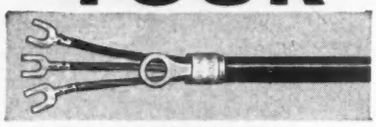
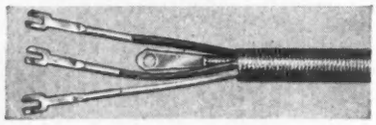
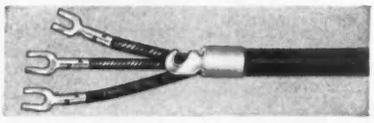
YOUR



BEST



BUY!



Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

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Roland Beard Honored at Testimonial Dinner

COMMEMORATING the completion of his 50th semi-annual canvass for the directory of the Home Telephone & Telegraph Co., Ft. Wayne, Ind. Roland T. Beard was honored with a surprise testimonial dinner. Mr. Beard is vice president and general manager of the Ft. Wayne office of Loomis Advertising Co.

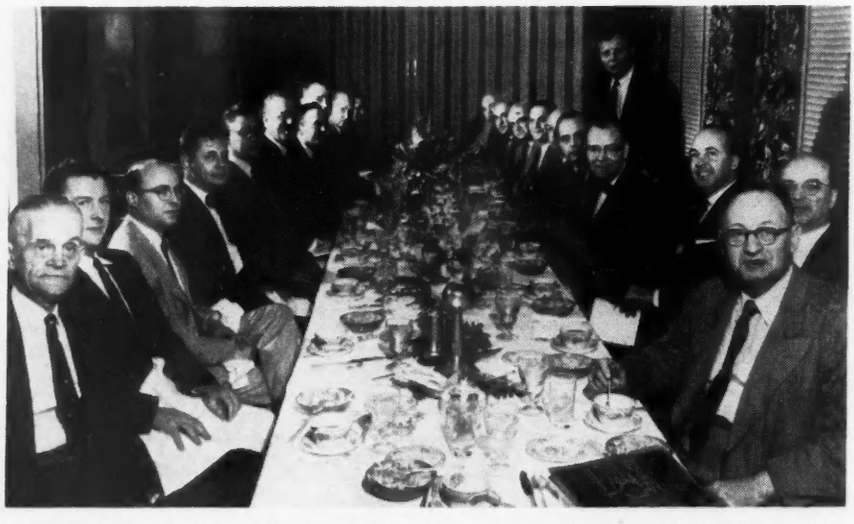
Mr. Beard was presented a gold-plated telephone of the type used by the Home Telephone & Telegraph Co. in 1930 by Emmett Swanson, company president, and C. D. Ingebrand, commercial manager. In his acceptance, Mr. Beard said he was happy to report the present canvass was the best in his 25 years of selling experience for Home Telephone & Telegraph Co. Advertising volume exceeded the previous all-time high by more than 10%.

The progress of telephone directory advertising closely parallels the tremendous advance made by telephony, it was pointed out by Wesley H. Loomis, president of the Loomis Advertising Co., who was toastmaster of the occasion. In 1930 Home Tel. & Tel. Co. consisted of 37,500 stations compared with approximately 83,000 stations today.

Directories were much in evidence at recent dinner honoring Roland T. Beard. Shown above are (l. to r.): — ROLAND T. BEARD, vice president and general manager, Ft. Wayne, Ind., office of Loomis Advertising Co.; EMMETT SWANSON, president, Home Telephone & Telegraph Co., Ft. Wayne, Ind.; ELDRIDGE KING, executive vice president, Loomis Advertising Co., Kansas City, Mo.; CLYDE KAUFFMAN, sales supervisor, Loomis Advertising Co., Ft. Wayne, Ind.; WESLEY H. LOOMIS, president, Loomis Advertising Co., Kansas City, Mo.

Thumbing through the June 1930, directory, Mr. Loomis noted it contained 127 pages of alphabetical, and 84 pages of classified advertising. This compares with 204 in the alphabetical pages and 293 classified Yellow Pages in the present issue.

Roland Beard is a native of Colby, Kansas, and joind the Loomis Advertising Co. staff as a salesman in 1927. He has been a resident of Ft. Wayne since 1942.



Guests at dinner honoring Roland T. Beard. Seated around table (l. to r.): FRANK W. GRIFFITH, sales representative; JAMES A. DEITSCHEL, sales representative; WILLARD HART, office manager, Ft. Wayne; LYNDON L. GUNDER, art director, Loomis Advertising Co., Ft. Wayne, Ind.; E. F. LAWMAN, sales representative; C. E. McCORMICK, vice president and general manager, Citizens Independent Telephone Co., Terre Haute, Ind.; JAMES T. SCOTT, sales representative; GEORGE BREWER, Telephone Services, Chicago, Ill.; GEORGE R. ALLEN, Jr., secretary-treasurer, Loomis Advertising Co., Kansas City, Mo.; EARLE R. STIMSON, sales representative; JOHN G. SCHULTHEIS, Home Telephone & Telegraph Co., Ft. Wayne, Ind.; CARL BITZINGER, sales representative; CLYDE KAUFMANN, sales supervisor, Loomis Advertising Co., Ft. Wayne, Ind.; OTTO MARAHRENS, Home Telephone & Telegraph Co., Ft. Wayne, Ind.; ELDRIDGE KING, executive vice president, Loomis Advertising Co., Kansas City, Mo.; WESLEY H. LOOMIS, president, Loomis Advertising Co., Kansas City, Mo. Standing: EMMETT SWANSON; president, Home Telephone & Telegraph Co., Ft. Wayne, Ind.; ROLAND T. BEARD, vice president and general manager, Loomis Advertising Co., Ft. Wayne, Ind.; C. D. INGEBRAND, commercial manager, Home Telephone & Telegraph Co., Ft. Wayne, Ind.; CLARENCE M. KLINGER, sales representative; LESTER P. WHITE, sales representative.

STROMBERG-CARLSON®

transmitter

Published by the famous makers of XY® Equipment

VOL. 3 NO. 11 FEBRUARY, 1955

The Stromberg-Carlson Type "B" Community Dial Office

by John E. Garner, Equipment Engineering

The Stromberg-Carlson Type "B" CDO was designed to make practicable a program of standardization with the XY® System of dial operations. Many Independent operating companies, having selected XY Systems for their principal offices, requested equipment designed to use the same proven elements but tailored to the needs and supporting revenues of the small (90 lines or under) community dial exchange.

Networks or non-contiguous groups under the same general management will derive the greatest operating efficiency by this standardization on one system which permits shifting plug-in switches and circuit plates within the service area on short notice to meet varying traffic demands or seasonal fluctuations. Also, the maintenance program is greatly simplified when routines are mastered for but one type of switching gear.

Although this standardization is a major consideration, the "B" system is equally valuable to the smaller operator with his first dial conversion. With a minimum of effort and initial cost, he can furnish all the features of the larger offices and grow into the more elaborate and expansive selector type exchange as the need arises.

In designing this system, simplicity in ordering, manufacturing, installation and maintenance were primary considerations. The entire unit is a "package" to be ordered to fit the requirements of the user from a list of many features. All cabling and wiring to the switchboard side of the built-in distributing frame is completed and tested at the factory. The power bay is completely assembled and wired with a plug-in arrangement to supply all power and supervisory leads to the equipment bay. Standard interrupters, ringing supply, tone generators and control circuits are furnished throughout with ample reserve for expansion. Switches and circuit plates, ordered as required, plug in ready for use.

The ultimate capacity of this switchboard is 100 lines including trunks, with 14 finder-connectors. Unused line facilities in a line group used for non-restricted trunks may be used for local lines.

Four digits are used in all subscriber's call numbers and if desired, a prefix of 2L-1N may be used for 2-5 directory listing.

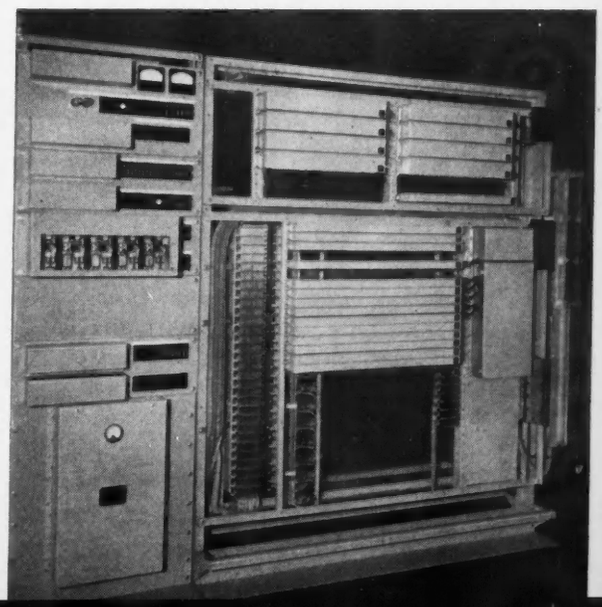
A standard connector is furnished with all features incorporated for any type of ringing, conversation timing, PBX hunting and individual or party line service.

Any of six types of trunks may be supplied and mounted indiscriminately up to the limit of ten trunks. Dial-to-manual and dial-to-dial loop, simplex or composite trunks with positive and negative pulsing or polar duplex signaling provide for any toll or free-service requirements over metallic, composite or carrier circuits. The trunk shelf is wired for three groups of trunks with metering, and trunk alternating is also provided for one trunk group, usually the toll group.

With these facilities, this switchboard is suitable for use in a network of telephone exchanges made up of dial and manual offices. A group of trunks can be assigned to any equipped level and served by either a dial or manual office, however it is expected that the associated offices in the network will not require toll service through this switchboard. For this service, all trunks terminate on line circuits and may not be used for tandem switching.

All type "B" systems include the following standard features:

1. 100% line-lockout in a 2-4 minute period.
2. Conversation timing, for local service, but easily made inoperative if so desired.
3. Single or dual allotters as ordered for even call distribution.
4. Restricted service available on a per line basis.



XY "B" System.

STROMBERG-CARLSON transmitter

Continued from page 1

5. Paystation-line service on a post-pay basis.
6. Selective ringing equipment which may be connected for
   a. Five-party selective ringing, or
   b. Ten-party selective ringing, or
   c. Ten-party semi-selective with 1 and 2 ring codes.
7. 10-code ringing facilities available if desired.
8. Pulse correction in all trunk circuits.
9. Repeat coils in all toll trunk circuits to match trunk and office impedances.
10. Relay type interrupter which operates from exchange battery.
11. Constant voltage 6-ampere charger for full float operation.
12. Ringing frequencies may be either the decimonic, synchromonic or harmonic series, or straight line (20 cycles) for code ringing.
13. Battery, 23 cell, 100 Amp. Hours.

The physical features are designed for easy installation in average room sizes. The height of all units is 7′6″ hence requiring no more than 8′ ceiling height. The switching unit with MDF attached is 6′ 5¾″ wide but for shipping purposes the MDF is folded within the frame reducing the width to 6′ for access through the lower type doors. The power bay is a separate unit only 2′ 5¼″ wide. When required, CX and signaling equipment may be furnished on a 19″ rack. Including the latter, the total length of the line-up is less than 11 feet. Switching bay, MDF and Power alone are only 8′ 11″. All bays have wide double base angles and are self supporting without superstructures.

A customer may order a "B" system, furnish office code assignment, trunk level assignment, ringing features desired and receive a completely wired unit. All that is required to put the equipment into service is to bolt the frame to floor, plug the power bay to the switching bay, connect AC to battery, plug in switches and circuit plates and connect outside lines to MDF. Installation is thus cut to a minimum and should be accomplished in no more than three days including testing.

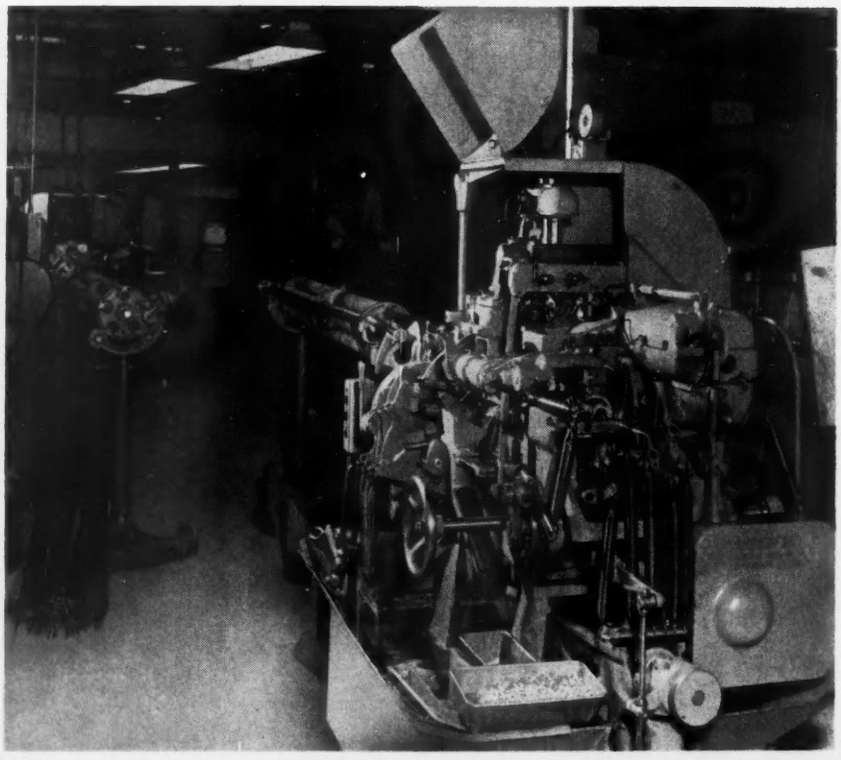
Machine Division Increases Output . . .

Charles Bement, Chief Tool Engineer, and Ellis Stanford check drawing of plastic mold against random sample of actual part.

Increased demand for Stromberg-Carlson dial systems and miscellaneous telephone apparatus could be met only by increased production in the machine sections where the basic parts are fabricated. Most departments represented here have been written up in previous issues of the TRANSMITTER, but even as this

Buried in your telephone handset is GOLD! Connie Aratari has been taught the exacting requirements of gold plating for best corrosion resistance on small but vital parts.

Davenports produce multi-operation screw machine parts in ONE handling, increasing both accuracy and efficiency of the operation.



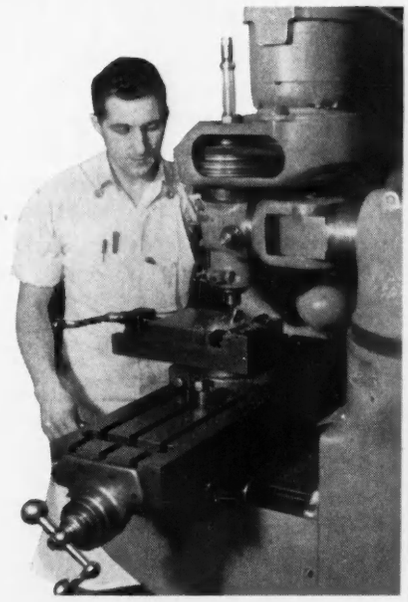
STROMBERG-CARLSON transmitter

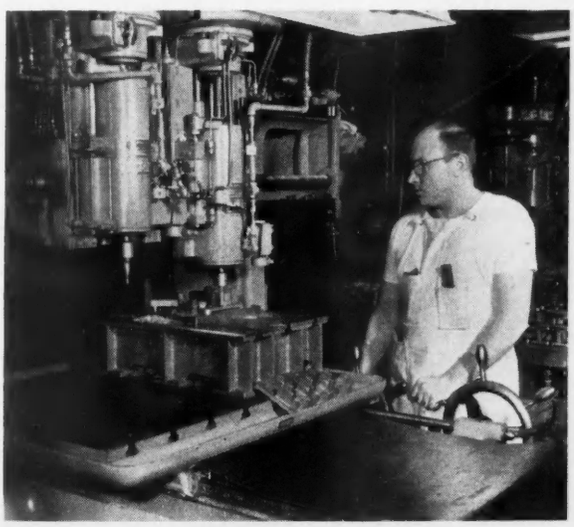
with New Machines and New Methods

goes to press, later model machines and streamlined methods are being investigated.

Mr. Howard Strassner, production manager, and Mr. Joseph Gray, superintendent of the Machine Section, could not have achieved their remarkable progress record without the excellent help which has come from the department heads: Lew Hutchings, Finishing; John Connors, Machines; Al Parina, Screw Machine; Bill Tevendale, Punch Press; Dick Mullen, Molding; Joe Roe, Tool Room; Charles Bement, Tool and Gauge Design; and Leonard Weber, Machine Maintenance.

All photos were taken by Harold Webster, toolmaker and camera enthusiast at Stromberg-Carlson.



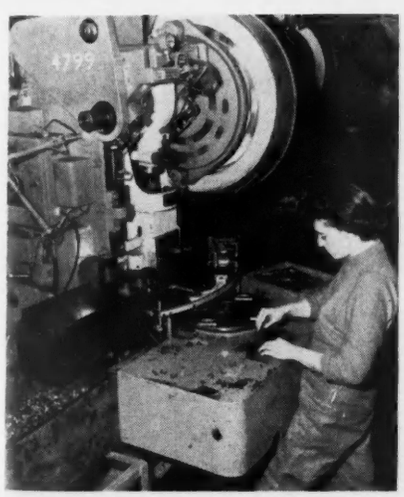


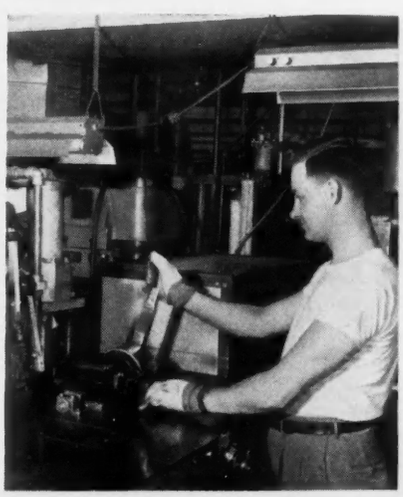
Above: Bob Grassi is milling a jig to close tolerances on one of the Bridgeports in the tool room.

Left: New Profiler, operated by James Ellis, mills castings such as vibrator mounting for perfect alignment.

Lower Left: Automatic-feed rotary punch press speeds operation, eliminates hazards, for Mary LaDelfa.

Below: Philip Morrow removes flash from telephone handset fresh from plastic molding presses.





MEET

Joseph S. Gray

Joseph S. Gray, superintendent of the Machine Division at Stromberg-Carlson, heads a group of master mechanics and craftsmen in tool design and machine operation of which he is justly proud. This quiet-spoken man has a background which earns the respect of all, for he has *done* the jobs he now directs.

Rochester educated—public schools followed by Rochester Institute of Technology — Joe Gray came up the ladder in typical American fashion by starting as a toolmaker's apprentice at Ritter Manufacturing Co. in Rochester. New jobs brought successive recognition and greater responsibilities: tool designer at General Railway Signal, chief tool engineer at Yawman & Erbe, supervisor of Processing and Tooling at Bausch & Lomb Optical. In 1951 he joined Stromberg-Carlson in his present top supervisory post.

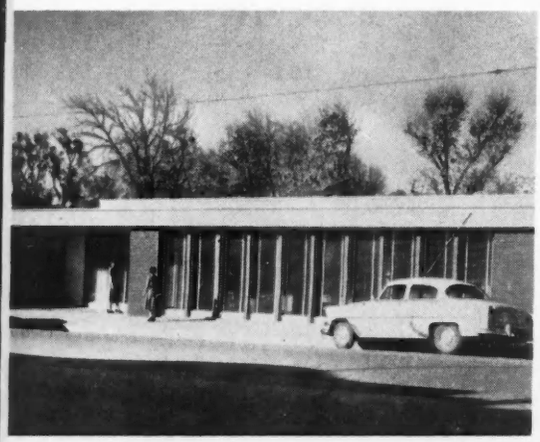
Over 500 men (and women — for under his direction many jobs have been re-studied to make this practicable) report to him, representing such varied skills as tool design, tool making, plating, heat treating, plastic molding, punch, drill press and screw machine operation and maintenance of machine tools.

Busy? Yes indeed, but let's look at the other side, too. Both children have followed in Joe's footsteps(you might almost think they'd been coached!) Lewis is an expert marksman in the Marine Reserve — could those hunting trips with Dad have had an influence? And Sandra has taken over the City Amateur Fancy Diving and Swimming crowns formerly held by her father. Mrs. Viola (Stewart) Gray glories in her family first, then gardening and flowers.

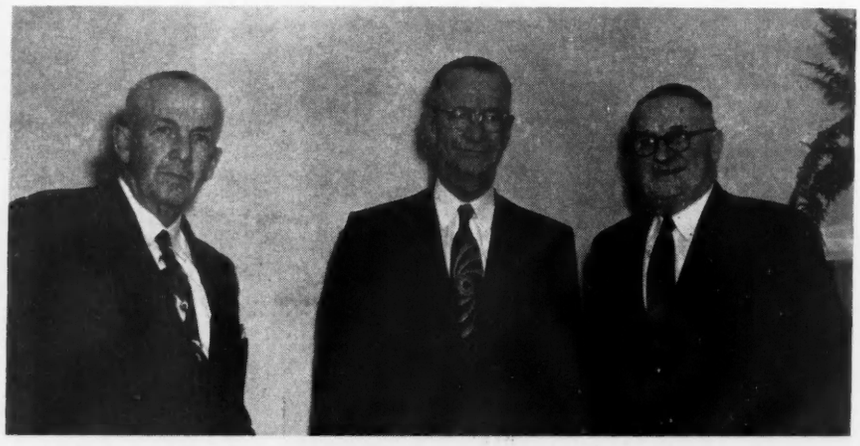
STROMBERG-CARLSON transmitter

California Public Utilities Brings XY Dial to Colusa, Cal., as

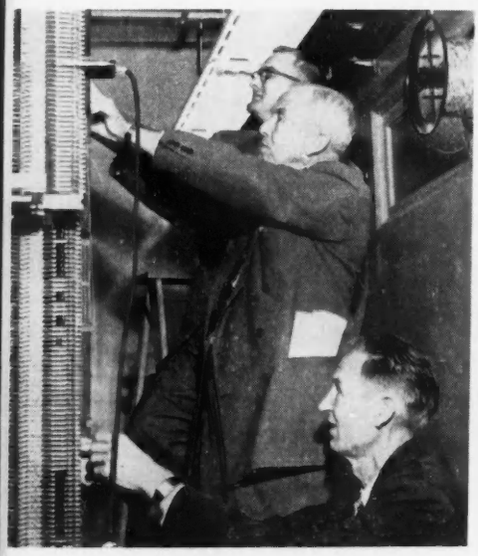
Dial Day, December 18, at Colusa, California didn't "just happen." The officers of California Public Utilities, and Mr. W. W. Stahl, equipment engineer, took great care in selecting the make of dial system and working up specifications for the equipment. Installation and testing had to conform to the high standards of this company. And finally the city had to be prepared for the change-over. All steps were covered with a thoroughness that promises satisfaction to all parties. The pictures below and story on facing page speak for themselves of a good job well done.



California Public Utilities promotes civic pride at every opportunity. Colusa office adds dignity and beauty to the city — bespeaks good service for its citizens.



To these men, credit at the management level. L-R, W. W. Stahl, equipment engineer; E. K. Albert, president; E. E. Kime, vice president — all of California Public Utilities.

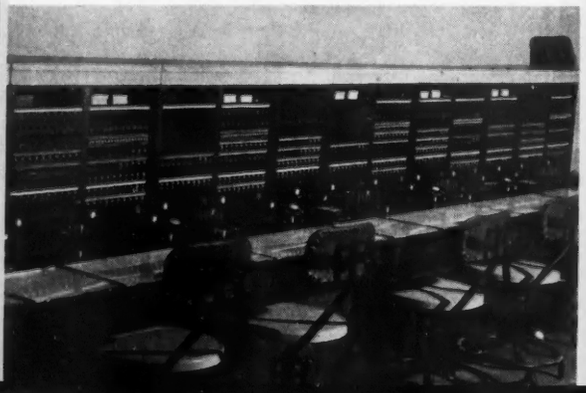


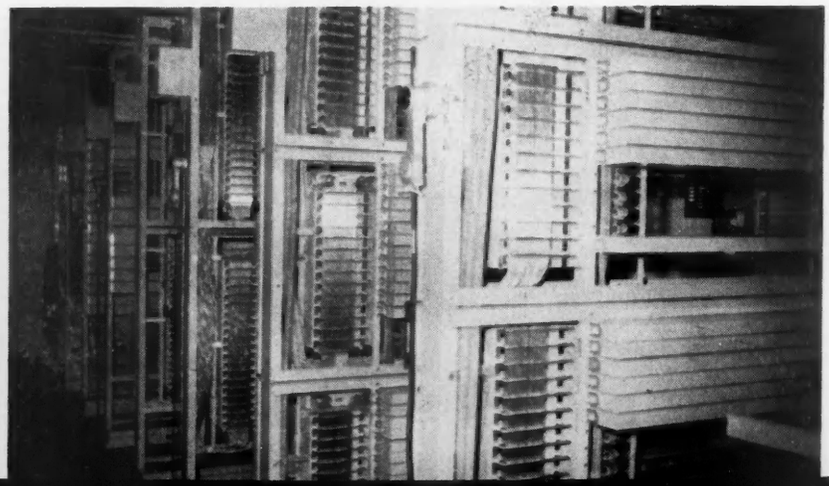
"The Hour Cometh." Making the cutover (reading down) Lowell Harmon, Stromberg-Carlson sales engineer; Mr. Stahl; Gayle Smith, Colusa district manager.

To these men, thanks for their good work. L-R, Bob Phelps, Stromberg-Carlson Sales; Ray Jouanicot, Colusa wire chief; Dan Monaghan, Stromberg-Carlson Installation foreman.

Portion of the equipment room. Multiple wire banks, complete interchangeability of switching equipment, space-saving features spell economy for multi-office operation in the future.

Six positions of Stromberg-Carlson No. 3 Toll Board provide nationwide intertoll dialing facilities to all cities having equal service.





STROMBERG-CARLSON transmitter

West Coast Continues Accelerated Program of XY Dial Conversions

California Public Utilities Company is characterized by its president, Mr. E. K. Albert, as the "Grass Roots Utility." This is not meant to belittle its size, but rather to emphasize that it has wrought magic in bringing metropolitan-grade services to the less populated areas of the West. The leaders of this company transform faith into action: by providing the facilities necessary to industry, homes, and the good life, they have created the "climate" in which a progressive utility can prosper.

Colusa is not a large city, but the new telephone system for its 1,812 subscribers is "as modern and efficient as can be found anywhere in the United States, regardless of population." Visitors from many California Independents attended the open house preceding the cut-over.

Kalama, Washington — 50 Years, One Family Operation

On September 8, 1954, the Kalama Telephone Co., Inc., celebrated its fiftieth year by cutting over a 200-line XY® Dial System. This company, founded in 1904 by G. M. Coffey (it had three stations then), is now owned and operated by Mrs. Eva Coffey England, his widow, and their son, Darrell Coffey. Top picture: Mr. and Mrs. Darrell W. Coffey and son, Ronald. Below: Ronald and his wife test new system.

Lincoln, Montana

At left, manager George J. Stoner makes a final inspection of the XY® dial equipment in the Lincoln community exchange of the Lincoln and Helena Telephone Co. This equipment was cut into service on November 1. In Lincoln and vicinity, the company has 55 stations. Flexibility of operation is a special requirement, because the area has a heavy summer tourist season each year, handles thousands of calls during these months.

Chester, Montana

At right, Roy L. Goodbar, president of the Chester Telephone Company, and Stromberg-Carlson representative Fred McGrady inspect Chester's new XY® Dial System, which was cut over October 10, 1954. The system serves 246 telephones. Mr. Goodbar took over the company in 1944, when it had only 72 telephones.

Unattended XY® Dial Office at Lyons, Oregon

Russell Wilson, president, and Ernest Larson, Stromberg-Carlson representative, are seen in the new XY® equipment building at Lyons, Oregon. Mr. Wilson cut over this office of the Peoples Cooperative Telephone Co. to the new XY® CDO on November 19, 1954. Another part of the improvement program was the re-building of lines, at an expense of $12,000. Subscribers are most enthusiastic.

STROMBERG-CARLSON transmitter

This I Remember . . . Miscellaneous Notes

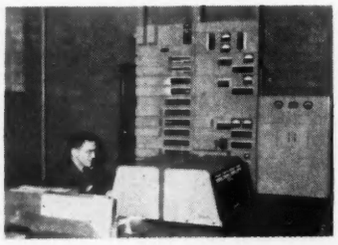
Charles Fisher

Charles R. Fisher is well known to many of you. During his years on the road as service engineer, helping plant personnel who were unfamiliar with dial systems learn the techniques of routining and trouble shooting, Charley was respected for his knowledge and ability — liked for his friendly personality and understanding of other peoples' problems.

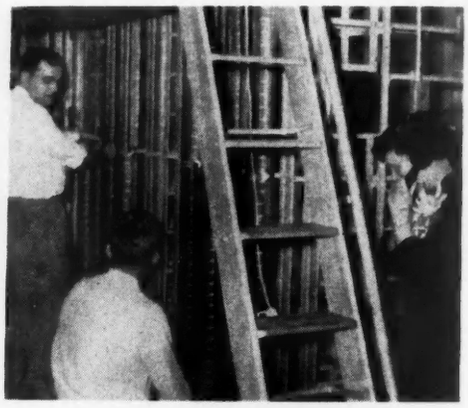
Charley has now "retired" — to the great joy of his nice wife and three young children — and is now working in the Research Division. Thanks, Charley, for a good job!

Emmaus, Pa.

Here Charley, familiar with circuits from several years experience as a design engineer, was first confronted with that maze of assorted boxes, cartons, reels of wire and steel frame members so familiar to installers on arrival. This was "school" — the old-fashioned, hard-knocks variety! Charley well remembers the helping hand of Ernie Larson, one of Stromberg-Carlson's top-flight installers and now Oregon sales representative. Good teacher, hard working student — diploma granted.



Don Stortz of Emmaus, Pa., makes a routine test on wire chief's turret.

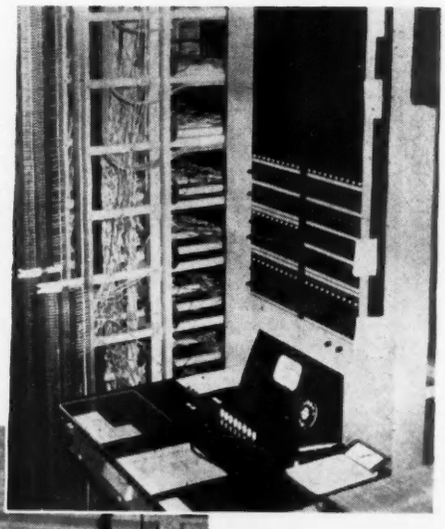


Miss Christine Miller, manager at Emmaus, checks last minute details preliminary to cutting over this fine XY dial exchange.

John Voss, vice president, and Frank Kessler, now a consultant on the West Coast, must be pleased with the results of a test they had completed in the Research Laboratory.

Lufkin, Texas

This might be likened to the "1000-mile" check on your car, after shakedown runs. Alert local management had pin-pointed spots needing attention. Most of this visit was spent in giving instructions on fuller use of test and information desks.

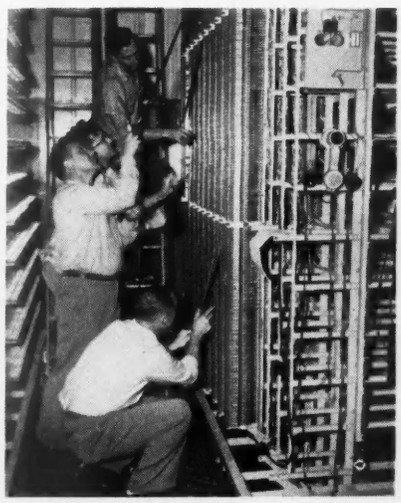


Latest type wire chief's test panel at Lufkin.

Flat-top Information and Special Service Desks at Lufkin are a joy to the operators, promote good customer relations.

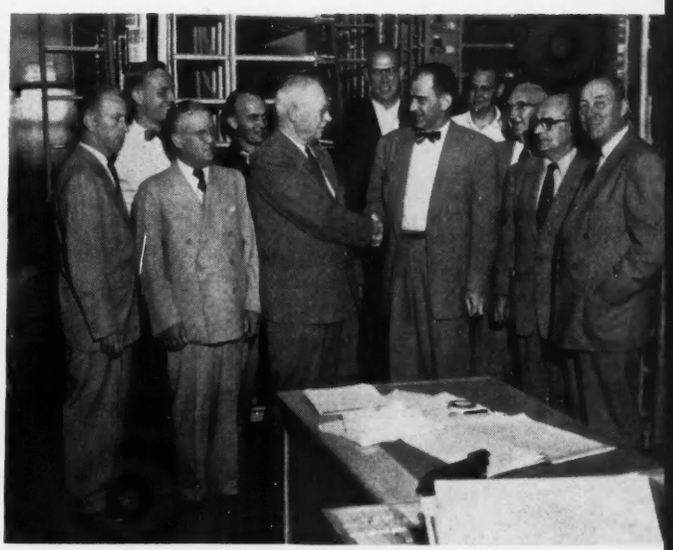
STROMBERG-CARLSON *transmitter*

from the Diary of a Traveling Service Engineer



West Coast Telephone Co. installers quickly mastered the techniques of wiring large dial MDO at Coos Bay, Oregon.

Bringing nationwide intertoll dialing to Coos Bay required patience and perserverance for operators and instructors alike.



President Chester H. Loveland congratulates Elmer Dubuque, district plant manager, as Ray Dalton, Peter Nanzel, George McBride and other West Coast Telephone Co. executives show pleasure in completion of task. Charles Fisher is second from left.

Coos Bay, Oregon

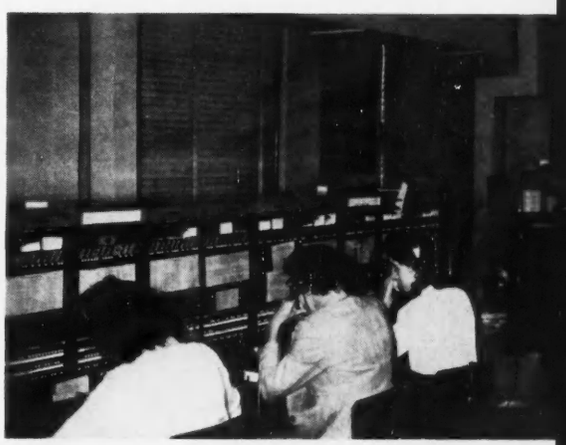
This fast-growing headquarters of the Marshfield District of the West Coast Telephone Company was their first large dial MDO. Charley's job here was to lead a training program for the excellent crew of West Coast Company installers and inside plant men. In addition to the XY®-MDO, Coos Bay became the company's first nationwide intertoll dialing center. Wonderful cooperation on the part of West Coast Company's engineering department, especially Dan Tompers and Leo McGuire and George McBride was mutually rewarding.

Sundays are your own!

Every locality has its special days, and with luck you might happen to hit one. The scene above is part of the Gasparilla Day Parade at Tampa, when "pirates" annually take over the city after "attack" from the Bay.

Tampa, Florida

In the far-flung network of the Peninsular Telephone Company, training of new personnel is a continuing program. The manufacturer's representative assists with his knowledge of the fine points of adjustment and other maintenance routines, helps in establishing check-points for on-the-spot correction, generally assists in the educational program.

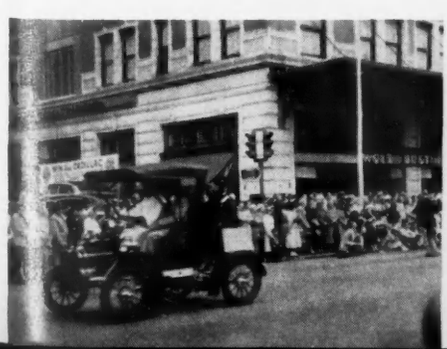


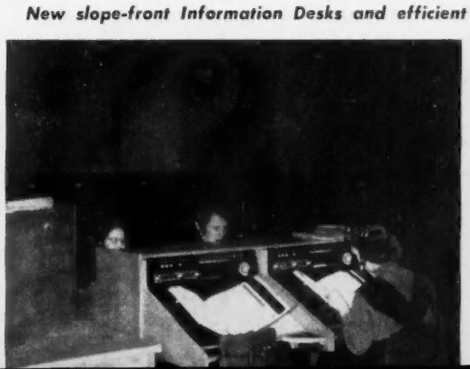
Portion of Tampa's impressive 80-position Toll Board.

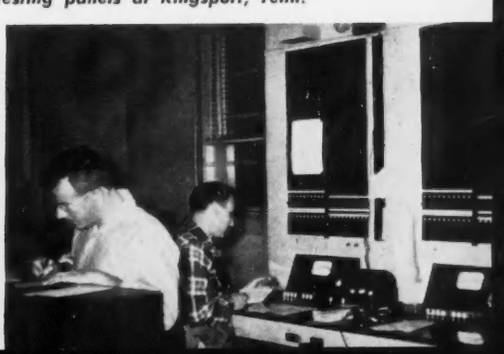
Kingsport, Tenn.

Again, training of local plant personnel, following beautiful installation by a crew headed by Ed Furguson. The "Brain Box," which reduces time and takes the guesswork out of testing, proved invaluable.

New slope-front Information Desks and efficient testing panels at Kingsport, Tenn.







STROMBERG-CARLSON **transmitter**

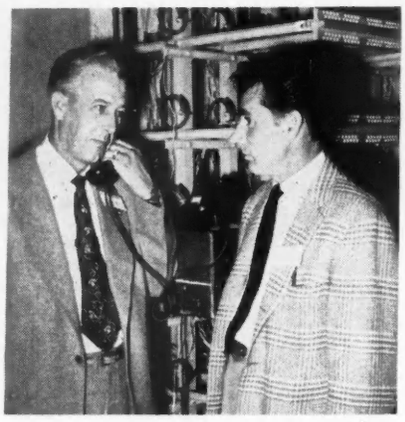
General of the Southwest brings XY Dial to Raymondville, Tex.

E. L. Langley, general equipment supervisor for General Telephone Company of the Southwest, points out features of the new XY® dial equipment to Don Hunsaker, vice president of the company.

Crowds gathered at open house to watch the new 7-position Stromberg-Carlson toll switchboard light up for the first time.

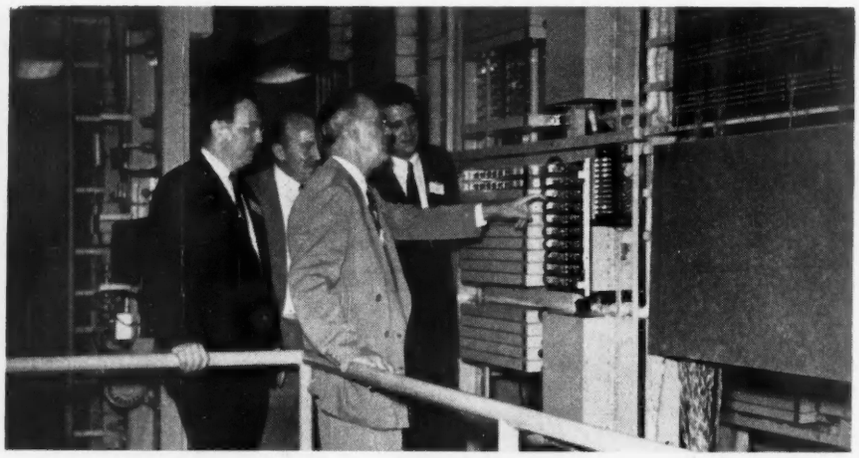
Accompanied by an excellent public relations program which included a dinner and an open house, General Telephone Company of the Southwest cut over its Raymondville, Texas, exchange to XY® dial operation.

Date of the cutover was December 10, 1954. Raymondville has over 1,700 stations, and subscriber enthusiasm was evidenced by large numbers attending the cut-over activities.



Gene Sullivan, Stromberg-Carlson installer, looks on as Ike Brantley, coordinator for General Telephone Company of the South west, checks new XY® equipment.

Left to right: Bill Riley, Stromberg-Carlson Kansas City office; Oscar Weisz, engineer, General Telephone Company of the Southwest, San Angelo, Texas; Art Preble, Stromberg-Carlson branch manager; and E. L. Langley, general equipment supervisor, General Telephone Company of the Southwest, San Angelo, Texas, in Raymondville XY room.



Copake, N. Y. Salutes J. D. Ackley, 50 Years in Telephony

John D. Ackley

It was forty-six years ago when John D. Ackley and four colleagues sat down around a table and each put out $1,000 to incorporate the Copake Telephone Co. Even then, John Ackley was no novice, for he had had three years experience with A. T. & T., and one year with the New York Telephone Co.

Last July, in a special Progress Report, the Copake Telephone Co. paid tribute to Mr. Ackley's 50th year in telephony. He is chairman of its board today, and his son, John Benedict Ackley is president of the company. Over his brilliant career, John D. Ackley has seen his company grow from 100 telephones in 1908 to 2,500 telephones in 1954. In 1953, the Hillsdale exchange was cut over to XY® dial, and in 1954 the Copake exchange was also converted to an XY® System.

Congratulations, Mr. Ackley, from your friends at Stromberg-Carlson!

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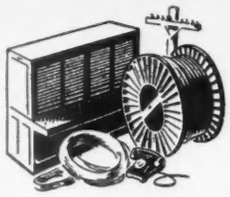

Advertisers' Index

Acme Visible Records, Inc. 8
Acorn Insulated Wire Co. 96
Alphaduct Wire & Cable Co. 93
American Appraisal Co. 102
American Creosote Co. 47
American Tel. & Tel. Co. 74-75
Ansonia Wire & Cable Co. 19
Armstrong Cork Co. 96
Automatic Electric Sales Corp. 6, 16, 32, 62-63, 83, 121

Bashlin Co., W. M. 109
Bohnsack Equipment Co. 108
Berry & Co., L. M. 2
Inside Front Cover
Bishop Manufacturing Corp. .....
Buckeye Telephone & Supply Co. 83, 108

C & D Batteries, Inc. 66
Cable Spinning Equipment Co. 87
Calculagraph Co., Inc. 40
Chance Co., A. B. 79
Commercial Cord & Supply Co. .....
Communi-Catering 102
Cook Electric Co. 9
Copperweld Steel Co. 23
Corey Steel Co. .....
Cowan Associates, B. S. .....
Crane, Carl C. 102
Cullom Ghertner Co. 102

Davis Construction Co. 102
Donnelley & Sons, R. R. 83

Electric Storage Battery Co. 7

Fulton Auto Exchange .....

General Cable Corp. .....
General Electric Co. .....
General Insulated Wire Co., Inc. 4
General Telephone Directory Co. 122
Back Cover
Gladwin Plastics .....
Gould National Batteries, Inc. 17
Graybar Electric Co. 50-51
Greenlee Tool Co. 76

Harris-McBurney Co. 102
Henkels & McCoy 102, 108
Hill Engineers, Inc., Cyrus G. 102
Hughey & Phillips 69

Independent Tel. Repair Co. 102, 108
Indiana Steel & Wire Co. 82
Instrument Laboratories .....
International Harvester Co. 33
International Standard Electric Corp. .....
Irwin Auger Bit Co. .....

Kato Engineering Co. .....
Kaufman, H. J., Co. .....
Kearney, James R., Corp. 103
Kellogg Switchboard & Supply Co. 26-27, 28-29, 90-91
Kimble Glass Co. 78
King, W. T. 102
Klein & Sons, Mathias .....
Koiled Kords, Inc. 69

Leich Sales Corp. 56-57
Line Material Co. —
A McGraw Electric Co. Div. ..... —
Loomis Advertising Co. 67
Lorain Products Corp. 3
Lowell Insulated Wire Co. .....

Mahood, Edwin T. 102
Maryland Electronics Mfg. Corp. .....
McCabe Powers Auto Body Co. 41
Metropolitan Telephone Supply Co. 108
Mitchell, Jay G. 102
Murphy Engineering Laboratories, Inc. 35

Natco Corp. 79
National Telephone Supply Co. .....
Neale Construction Co. 102
North Electric Mfg. Co. 14-15

Owens Illinois Glass Co. 78

Page & Hill, Inc. 103
Penn Line Service 102
Piedmont Wood Preserving 109
Porcelain Products 16
Power Equipment Co. .....
Preformed Line Products Co. 95

Raytheon Manufacturing Co. 36
Reliable Electric Co. 42
Remington Rand, Inc. 37
Republic Creosoting Co. ..... —
Roanwell Corp. 97
Roll-A-Reel Corp. .....
Runzel Cord & Wire Co. 110

Safety Tower Ladder Co. 79
Schauer Manufacturing Corp. .....
Seymour Smith & Son, Inc. 86
Sloan, Cook & Lowe 102
Stromberg-Carlson Co. 13, 30-31, 44-45, 98-99, 109, 111-118
Superior Cable Corp. 5
Suttle Equipment Co. 102

Taylor-Colquitt Co. 16
Telectric Co. .....
Telefon Fabrik Automatic A/S .....
Tel-E-Lect Products, Inc. 101
Telephone Answering & Recording Corp. 89
Telephone Engineer & Management ..... —
Telephone & Power Supply Co. 102
Telephone Repair & Supply Co. 109
Telephone Supply Corp. 108
Telkor, Inc. 109
Thompson Chemicals Corp. 39
Tool Design & Equipment Co. .....

U. S. Independent Tel. Assoc. 38
U. S. Motors Corp. .....
U. S. Steel, Coal & Chem. Div. 71
U. S. Steel (American Steel & Wire) .....
Utica Drop Forge & Tool Corp. 84
Utility Tool & Body Co. 34

Western Electric Co. 80-81
Whitney Blake Co. 46
Wiebel, Inc., L. H. .....
Williams, Geo. E. Co. 109
Williams Inspection Co., A. W. 102
Wooten & Co., L. H. 102

York Hoover Corp. .....

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The Back Of The Book

By JOHN G. REYNOLDS

Nation's Smallest Company ? ? ?

WHERE is the nation's smallest telephone company located? Our Western correspondent tells us: — "One of the smallest telephone companies in the country went into service last month in the Pikes Peak Region. Serving three ranches in the Edlowe Area, near Woodland Park, Colo., the *Edlowe Telephone Co.*, was organized by *Roger Holden, Robert Markus, Doyle Garrett, Edward Pack* and *Lewis Johnston*, and has six miles of line in the mountainous country on the north side of Pikes Peak."

The three telephones on the line are served thru the Colorado Springs exchange of the *Mountain States Telephone & Telegraph Co.* The Edlowe line connects with a Moutain States line west of Woodland Park, and runs southwestward toward Pikes Peak to serve Catamount, Markus and Holiday Guest Ranches. The result of eight years of planning on the part of ranch owners, the line has 98 poles, all of them set by the ranchers, who also strung the wire. Total cost of the line was approximately $1,000.

President of the company, incorporated under Colorado law, is Holden, owner of Catamount Ranch. Markus is vice-president and Johnston of the Holiday Guest Ranch, secretary-treasurer. Holiday Guest Ranch is owned by Garrett and Pack.

If you know of a smaller company-let us know.

The Logic of a Child

WE ARE indebted to *The Blue Bell* for the following example of childish logic, taken from a school composition on "people," written by a six year-old girl:

"People are composed of girls and boys, also men and women. Boys are no good at all until they grow up and get married. Men who don't get married are no good either. Boys are an awful bother. They want everything they see except soap. My ma is a woman, and my pa is a man. A woman is a grown up girl with children. My pa is such a nice man that I think he must have been a girl when he was a boy."

Definitions

THE *Public Relations Journal* thinks it is possible that executives sometimes take themselves too seriously. It cites a few definitions of executives that are worth noting *"An executive is a man who goes around with a worried look on the face of his assistant."*

Another—*"An executive is one who goes out and finds something that needs to be done. He then finds somebody willing to pay for it. Then he hires somebody to do it."*

"Last Laugh Was Last"

TELEPHONE experts in Copenhagen, Denmark, are pondering the problem of a woman with a laugh powerful enough to blow telephone fuses.

The woman, unnamed, reported her telephone out of order half a dozen times over the last few months. Finally, telephone technicians invited her to their laboratory for tests. While the tests were under way, somebody cracked a joke. The woman let out a shrill whoop and the test circuit went dead.

"We had never encountered such a sound on telephone circuits before," explained the technicians.

The company now has installed a new telephone in the woman's house, but has made her promise never to laugh into the mouthpiece.

Booth Trouble at New Baden, Ill.

APPARENTLY the Looking Glass Prairie Tel Co., which proudly installed its first public telephone booth in New Baden, Ill., a few months ago is sick and tired of the dirt and vandalism perpetrated by the youngsters who have taken over.

Once more, and finally, the company has repaired the telephone booth and warned the public that if certain individuals do not know how to treat private property, then the convenience will have to come to an end.

Here's what's been happening to New Baden's outdoor booth: —

(1) The booth has been crowded with kids who tie up service for as long as 45 minutes while persons with good reason for using the telephone have had to wait.

(2) The receiver has been left off the hook.

(3) The directory has been torn and several copies have been stolen.

(4) The plate glass and booth interior have been damaged.

(5) Youngsters crowd in the booth for some fancy "necking".

Such *"going's on"* have caused the *New Baden (Ill.) News* to advise its readers — *"Any more monkey-business, destroying of equipment and talking in it for periods longer than five minutes, and out comes the Booth and Telephone!"*

Perhaps you have had similar troubles? If so, how did you whip it? I'd like to hear from you.

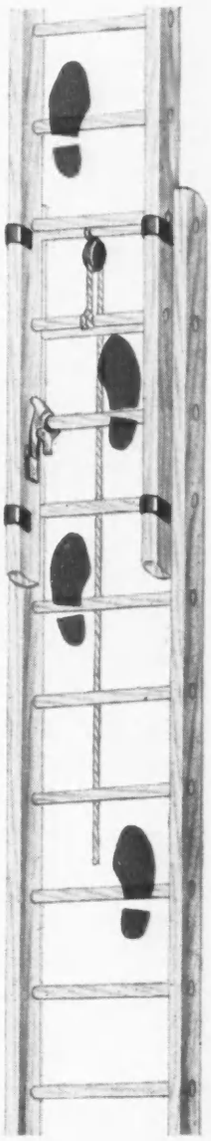
Automatic's pointers for plantmen

Going Up? Be sure of your steps!

The strength of a Babcock ladder is apparent the moment you set foot on a rung. The ladder's firmness, solid feel and smooth finish are all proof of top quality and workmanship. And as your confidence increases with each sure-footed step, it is reflected in more productive, efficient work.

This "Utilities grade" extension ladder is made of selected white spruce in two 12-foot sections; top part complete with spring lock, pulley and rope. Weighs only 48 pounds. Other sizes also available!

Cat. No.	Each
S-5153	$27.45



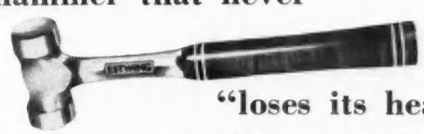
This Mutual gas tank performs like magic:

- Can be transformed in seconds into a furnace – heater – soldering assembly – field stove.
- Lights up instantly, with one match, and a simple twist of the wrist. Pumping time is changed to *working* time!

Mutual's liquid propane gas tank has proved its versatility. With proper attachments, it's a furnace melting a pot of lead; a heater thawing out a crew of men; a soldering assembly for cable splicing; or a field stove brewing a pot of steaming coffee.

It's almost magical, too, the way this tank gets going. Time was when you had to pump, prime, and preheat a furnace before it would really get started. With the modern convenience of liquid propane gas, that nuisance is gone forever. The pressure is already in the tank. All you do is turn the valve and hold a lighted match over the orifice – and instantly you have a strong, steady flame! Order a complete set of Mutual liquid propane gas equipment – or start with just the pieces you need. See Automatic Electric's big new supply catalog for details.

The hammer that never "loses its head"



Nor does the new Estwing Lineman's double-face hammer ever "fly off the handle." The reason is that the head and shank are molded out of one solid piece of fine tempered tool steel. The head *can't* come off – and the handle won't crack; you save time and money replacing loose, broken, or splintered handles.

Like all Estwings, the Linesman's hammer is perfectly balanced with just the right hang for steadier work without tiring. Handle is covered with genuine soft leather washers for a comfortable, non-slip grip.

Cat. No. S-4573 Each $2.50

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Automatic Electric maintains a complete stock of *approved* supplies in all its warehouses. Whether it's nuts and bolts, or body belts or reels of messenger strand, we have them. And more than likely we can deliver right off the shelves – with no "back orders" to trickle in and cost additional shipping charges. Next time, order from Automatic Electric the *complete* source of supply.

Prices are F.O.B. Chicago and subject to change without notice.

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are YOU disturbed . . .

by your P&L statement?

Don't be like the Pinacate beetle, who stands on its head when disturbed. If you can't cut costs further, there's still a way out. How? By getting a greater yield from your Directory. Our business is making directories more productive. We've done it for many other telephone companies. Perhaps we can do it for you.
Let's talk it over.

P. S.: *"Know how" sets up advertising volume — and in addition means a smarter looking book, greater accuracy, better customer relations with subscribers.*

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